



Atomic Industrial Forum, Inc.

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August 11, 1976



Mr. Charles Kaplan
U.S. Environmental Protection Agency
Region IV
1421 Peachtree Street, N.E.
Atlanta, Georgia 30309

Dear Charles:

Enclosed are the two copies of our 316 list you requested.
The list has just come off the press and I hope I have accurately
recorded all the information you provided.

I deeply appreciate the time and effort you offered us in the
midst of your own hectic work load. Any comments you have
regarding the list are welcome.

Many thanks for your help.

Sincerely,

Shu-Shun Chiang
Research Supervisor

SC:mt
Enclosures

INFORUM/316

AUGUST 1976

Special Editor: NANCY PEPPER GARRUS

316 INTRODUCTION

This index contains a listing of Section 316(a) and (b) applications submitted to state and regional EPA authorities under the Federal Water Pollution Control Act Amendments of 1972. This updated listing refines previous information in the February 1976 issue of INFORUM.

In a continuing effort to verify and update 316 information, the research staff would appreciate hearing from individual utilities listed as to the status of 316 applications within a company. The staff would also like to acquire documentation of demonstrations submitted to the regulatory agency. Documents should be sent to INFORUM Research Supervisor, Shu-Shun Chiang, Atomic Industrial Forum, 1747 Pennsylvania Ave., N.W., Suite 1150, Washington, DC 20006, telephone (202) 833-9234.

This index is organized according to the 10 regions of the U.S. Environmental Protection Agency. Within each region, data are arranged alphabetically by state/utility. For each plant, the information includes capacity, fuel type, operating date, receiving water body, location, type of cooling system, and status of 316(a) and (b) applications. In most instances the operating dates are indicated for initial year of plant operation. Wherever possible, however, operating dates are listed individually for each unit or noted inclusively for plants of 4 or more units.

FUEL TYPE

C	Coal
G	Gas
GT	Gas Turbine
N	Nuclear
O	Oil

COOLING SYSTEM

COM	Combination
CL	Cooling Lake
CP	Cooling Pond
CT	Cooling Tower
MT	Mechanical Draft Cooling Tower
NT	Natural Draft Cooling Tower
OT	Once-Through
SC	Spray Canal

STATUS OF 316(a) and (b)

AP	Request approved
CA	Conditional approval
T	Court hearings
EX	Plant exempt
NA	Not applicable

NR Monitoring not required as closed-cycle cooling is imposed in the final NPDES permit pursuant to the effluent guidelines or 316(b)

PN Final NPDES permit has not been issued for this facility

PR Preparatory at company level; in case of 316(b) may represent study program underway

RJ Request rejected

RV Request under review by regulatory agency

In order to obtain the information contained in this index, INFORUM has spoken with EPA officials in each region and contacted personnel of the individual utilities. The research staff is engaged in the continuing process of updating and verifying the data.

ACKNOWLEDGEMENT

We are indebted to the following EPA officials for their assistance in providing us with the appropriate information.

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REGION VIII

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REGION IX

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REGION X

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The following is a listing of utility contacts who have been helpful in providing **INFORUM** with the appropriate information, as well as verifying the data.

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INFORM 316

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS	
								316a	316b
CT	CT Light & Power-Devon 8 Units	O	481	1924	Housatonic R	New Haven Co.	OT	EX	PR
CT	CT Light & Power-Montville	O	580	1937	Thames R	New London Co.	OT	EX	PR
	5 Units								
CT	CT Light & Power-Norwalk Harbor	O	338	1960	Long Island Sound	Fairfield Co.	OT	EX	PR
	2 Units								
CT	CT Yankee-Haddam Neck	N	575	1967	Connecticut R	Middlesex Co.	OT	EX	PR
CT	Hartford Elec-Middletown	O	833	1954	Connecticut R	Middlesex Co.	OT/MT	EX	PR
	4 Units								
CT	Hartford Elec-South Meadow	C	223	1921	Connecticut R	Hartford Co.	OT	EX	PR
	6 Units								
CT	Naval NUSC-New London	O			Thames R	New London Co.		EX	AP
CT	Naval Submarine Base	O	5		Thames R	New London Co.	OT	EX	PR
CT	Northeast Utilities-Millstone	N	2636	1970/75/79	Long Island Sound	New London Co.	OT	AP	PR
	3 Units								
CT	United Illuminating Co-	O	447	1975	New Haven Harbor	New Haven Co.	OT	EX	PR
	New Haven Harbor Sta								
CT	United Illum-Bridgeport 3 Units	O	679	1957	Bridgeport Harbor	Fairfield Co.	OT	EX	PR
CT	United Illum-English 8 Units	O	163	1929	Mill R	New Haven Co.	OT	EX	PR
CT	United Illum-Steel Point 11 Units	O	174	1923	Bridgeport Harbor	Fairfield Co.	OT	EX	PR
MA	Bird & Son, Inc	O	5		Neponset R	Norfolk Co.	OT	EX	AP
MA	Boston Edison-Edgar Sta 3 Units	O	180	1949	Boston-Wey Fore R	Norfolk Co.	OT	EX	PR
MA	Boston Edison-L Street Sta	O	200	1898	Boston Harbor	Suffolk Co.	OT	EX	PR

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
2 Units								
MA	Boston Edison-Mystic Station	O	1218	1939	Boston-Mystic R	Middlesex Co.	OT	RV PR
MA	Boston Gas-Malden	O	10	1943	Malden R	Middlesex Co.	OT	EX AP
MA	Boston Edison-Pilgrim #1	N	670	1972	Atlantic Ocean	Plymouth Co.	OT	CT
MA	Boston Edison-Pilgrim #2	N	1180	1982	Atlantic Ocean	Plymouth Co.	OT	RV
MA	Braintree Elec-Allen St	O	21		Boston-Wey Fore R	Norfolk Co.	OT	EX PR
MA	Braintree Elec-Potter Sta	O	125		Boston-Wey Fore R	Norfolk Co.	OT	EX PR
MA	Braintree Elect-Potter 2	O	25	1976	Weymouth Fore R	Norfolk Co.	MT	EX AP
MA	Cambridge Elec-Blackstone	O/G	22	1890	Charles R	Middlesex Co.	OT	EX PR
3 Units								
MA	Cambridge Elec-Kendall Square	O/G	70	1949	Bd. Canal-Charles R	Middlesex Co.	OT	EX PR
3 Units								
MA	Canal Electric-Canal Plant	O	1120	1968	Cape Cod Canal	Barnstable Co.	OT	AP
2 Units								
MA	Holyoke Gas & Electric Dept	O	30		Connecticut R	Hampden Co.	OT	EX PR
MA	Holyoke Water-Mt Tom Plant 1 Unit	O	200	1960	Connecticut R	Hampden Co.	OT	EX PR
MA	Holyoke Water-Riverside Sta	O	45		Connecticut R	Hampden Co.	OT	EX AP
MA	Hudson Light & Power-Hudson	O/G	20	1930	Assabet R	Middlesex Co.	MT	EX AP
MA	M.B.T.A.-Lincoln Power Sta	O	60		Boston Harbor	Suffolk Co.	OT	EX PR
MA	M.B.T.A.-South Boston Power	O	120		Boston Harbor	Suffolk Co.	OT	EX PR
MA	Montaup Electric-Somerset 6 Units	O	344	1925	Taunton R	Bristol Co.	OT	EX PR
MA	Nantucket Gas & Electric	O	12		Nantucket Harbor	Nantucket Co.	OT	EX AP
MA	New Bedford Gas & Edison-Cannon	O	80	1916/1947	New Bedford Hbr	Bristol Co.	OT	EX PR
3 Units								
MA	New England Power-Uxbridge	Transformer			Mumford R	Worcester Co.	OT	EX AP

SECTION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MA	New England Elec Sys.-Brayton	0	1610	1963	Mount Hope Bay	Bristol Co.	OT/MT ³	EX ² PR
	4 Units							
MA	New England Elec. Sys.- Salem Harbor 4 Units	0	775	1952	Salem Harbor	Bristol Co	OT	EX ² PR
MA	Peabody 4 Units Municipal-Peabody	0	11	1949-1966	Proctor Brook	Essex Co.	OT	EX AF
MA	Taunton Light-Cleary Sta 2 Units	0	29	1966/1975	Taunton R	Bristol Co.	OT/MT	EX PR
MA	Taunton Light-W Water Sta 5 Units	0	49	1902/1933	Taunton R	Bristol Co.	OT	EX PR
MA	Sprague Elec Co	0	15		Hoosac	Berkshire Co.	OT	EX AP
MA	Wamest Power Co	0	15		River Meadowbrook	Middlesex Co.	OT	EX AP
MA	Western Mass Elec-W Springfield	0	210	1949	Connecticut R	Hampden Co.	OT	EX PR
	3 Units							
MA	Yankee Atomic Elec. Co.	N	175	1960	Deerfield R	Franklin Co.	OT	EX PR
ME	Bangor Hydro Elec-Machias	0	2		East Machias R	Washington Co.	OT	EX AP
ME	Bangor Hydro Elec-Graham 3 Units	0	69	1954	Penobscot R	Penobscot Co.	OT	EX AP
ME	Central ME Pwr-Cape Sta	0	23		Fore R	Cumberland Co.	OT	EX PR
ME	Central ME Pwr-Mason 5 Units	0	147	1957	Sheep Scott R	Lincoln Co.	OT	EX PF
ME	Central ME Pwr-Wyman 4	0	600	1976	Casco Bay	Cumberland Co.	OT	AP AP
ME	Maine Public Service-Caribou	0	32		Aroostook R	Aroostook Co.	OT	EX AP
ME	Maine Yankee Atomic Power	N	790	1972	Back R	Lincoln Co.	OT	PR PR
ME	U.S. Naval Base-Portsmouth	0	5		Piscataqua R	York Co.	OT	EX PR
NH	P.S. Co of NH-Newington 1 Unit	0	400	1974	Piscataqua R	Rockingham Co.	OT	PR PR
NH	P.S. Co of NH-Daniel Sta	0	20		Piscataqua R	Portsmouth Co.	OT	EX PR
NH	P.S. Co of NH-Manchester	0	20		Merrimack R	Rockingham Co.	OT	EX PR
NH	P.S. Co of NH-Merrimack 2 Units	0	454	1960	Merrimack R	Merrimack Co.	OT/SC	EX PR
NH	P.S. Co of NH-Schiller 4 Units	0	180	1949	Piscataqua R	Rockingham Co.	OT	EX PF
NH	P.S. Co of NH-Seabrook 2 Units	N	2300	1981	Atlantic Ocean	Rockingham Co.	OT	CT CT
RI	Bird & Son, Inc	0	5		Ten Mile R	Providence Co.	OT	EX AP

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
RI	Narragansett Electric-Manchester	O	132	1902/1941	Providence R	Providence Co.	OT	EX PP
3 Units								
RI	Narragansett Electric-So St Sta	O	187	1909/1918	Providence R	Providence Co.	OT	EX PR
3 Units								
RI	Newport Electric-Newport	O	14		Narragansett Bay	Newport Co.	OT	EX PR
RI	U.S. Naval Base	O	10		Narragansett Bay	Newport Co.	OT	EX PP
VT	Burlington Elec-Moran	C	30	1954	Lake Champlain	Chittenden Co.	OT	EX AP
VT	Central VT Pub Serv-Milton 1 Unit	O	4	1943	Lamoille R	Chittenden Co.	OT	EX AP
VT	Central VT Pub Serv-Rutland	O	25	1952/52/62	Otter Creek	Rutland Co.	OT	EX AP
3 Units								
VT	Citizens Utilities-Newport	O	14	1947/1956	Clyde R	Orleans Co.	OT	EX AP
2 Units								
VT	Green Mt Power-Essex Junction				Winooski R			EX AP
VT	Vermont Yankee Nuc Power	N	520	1972	Connecticut R	Windham Co.	OT/MT	PR ¹ PR

FOOTNOTES:

- 1 - Type I monitoring and Type III studies in progress since December 1974.
- 2 - 316(a) demonstration will be made only if state water quality standards impose thermal limits more stringent than EPA guidelines.
- 3 - Unit #4 is an independent unit utilizing a circulating pond with spray modules.

CODES:

- AP - Request approved.
 CT - Court hearings.
 EX - Plant exempt.
 PR - Preparatory at company level; in case of 316(b) may represent study program underway.
 RV - Request under review by regulatory agency.

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS	
								316a	316b
NJ	Atl. City Elec-B.L. Enq. 2 Units	C/O	299	1962	Great Egg Harbor B	Cape May Co.	OT/CT ¹	(2)	
NJ	Atl. City Elec-Deepwater 4 Units	O	277	1928	Delaware R	Salem Co.	OT ¹	(2)	
NJ	Jer. Cent. PEL-Oyster Creek	N	640	1969	Barnegat Bay	Ocean Co.	OT ¹	PR	PR
	1 Unit								
NJ	Jer. Cent. PEL-Sayreville 4 Units	O	344	1930	Raritan R	Middlesex Co.	OT ¹	(9)	PR
NJ	Jer. Cent. PEL-E.H. Werner	O	116	1930	Raritan R	Middlesex Co.	OT	(7)	PR
	4 Units								
NJ	Jer. Cent. PEL-Gilbert 3 Units	O	126	1930	Delaware R	Hunterdon Co.	OT ¹	(7)	PR
NJ	PSEEG-Atlantic 2 Units	N	2300	1985/1987	Atlantic Ocean	Atlantic Ocean	OT	PR	PN
NJ	PSEEG-Bergen 2 Units	O	650	1959/1960	Overpeck Creek	Bergen Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Burlington #7	O	193	1955	Delaware R	Burlington Co.	OT ¹	RV	PR
NJ	PSEEG-Burlington Com Cycle			1974	Delaware R	Burlington Co.	OT	RV	NR
NJ	PSEEG-Essex #9	O	203	1973	Passaic R	Essex Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Hudson 2 Units	C/O	1114	1964/1968	Hackensack R	Hudson Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Kearny 2 Units	O	296	1953/1953	Hackensack R	Hudson Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Linden 3 Units	O	613	1957/57/72	Arthur Kill	Union Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Mercer 2 Units	C/O	653	1960/1961	Delaware R	Mercer Co.	OT ¹	RV	PP
NJ	PSEEG-Sewaren 5 Units	O	820	1948-1962	Arthur Kill	Middlesex Co.	OT ¹	RV ⁶	PR
NJ	PSEEG-Salem 2 Units	N	2205	1976/1979	Delaware R	Salem Co.	OT	RV	NR
NY	Central Hudson-Danskammer 4 Units	O	532	1951	Hudson R	Orange Co.	OT ¹	RV	PR
NY	Central Hudson-Roseton	O	1200		Hudson R	Orange Co.	OT	RV	NR
NY	Con Ed-Arthur Kill 2 Units	O	826	1959	Arthur Kill	Richmond Co.	OT ¹	RV	PR
NY	Con Ed-Astoria 5 Units	O	1466	1953	East River	Queens Co.	OT ¹	RV	PR
NY	Con Ed-East River 3 Units	O	432	1951	East River	New York Co.	OT ¹	RV	PR
NY	Con Ed-Indian Point #1	N	273	1962	Hudson R	Westchester Co.	OT	NA	EX
NY	Con Ed-Indian Point #2	N	873	1973	Hudson R	Westchester Co.	OT	(3)	PR
NY	Lilco-E.F. Barrett 2 Units	O	375	1956/1963	Barnums Island C	Nassau Co.	OT ¹	RV	PR

REGION II

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
NY	Lilco-Far Rockaway 1 Unit	O	114	1953	Mott Basin	Queens Co.	OT ¹	RV PR
NY	Lilco-Glenwood 4 Units	O	377	1938/52/54	Hempstead Harbor	Nassau Co.	OT ¹	RV PR
NY	Lilco-Northport #1-3	O	1161	1967/68/72	Long Island Sound	Suffolk Co.	OT	RV PR
NY	Lilco-Northport #4	O	387		Long Island Sound	Suffolk Co.	OT	EX PR
NY	Lilco-Port Jefferson 4 Units	O	467	1948	Port Jefferson	Suffolk Co.	OT ¹	RV PR
NY	Lilco-Shoreham 1 Unit	N	819	1979	Long Island Sound	Suffolk Co.	OT	RV NR
NY	N.Y. State EGG-Goudey 4 Units	C	104	1943	Little Coconut Cr.	Broome Co.	OT ¹	PR PR
NY	N.Y. State EGG-Greenidge 4 Units	C	170	1938	Keuka Lake Outlet	Yates Co.	OT ¹	PR PR
NY	N.Y. State EGG-Hickling 2 Units	C	75	1948	Chemung R	Steuben Co.	OT ¹	PR PR
NY	N.Y. State EGG-Jennison 2 Units	C	60	1945	Susquehanna R	Schenango Co.	OT ¹	PR PR
NY	N.Y. State EGG-Milliken 2 Units	C	300	1955	Cayuga Lake	Tompkins Co.	OT ¹	RV
NY	Niagara Mohawk P-Albany S 4 Units	O	400	1952	Hudson R	Albany Co.	OT ¹	PR (4)
NY	Niagara Mohawk P-9/M #162	N	1610	1969/1982	Lake Ontario	Oswego Co.	OT ⁵	RV (4)
NY	Niagara Mohawk P-Oswego #1-4	O	376	1940	Lake Ontario	Oswego Co.	OT ¹	PR (4)
NY	Niagara Mohawk-Oswego #566	O	1750	1975/1979	Lake Ontario	Oswego Co.	OT	RV
NY	Niagara Mohawk-C R Huntley	C	875	1942	Niagara R	Erie Co.	OT ¹	RV (4)
6 Units								
NY	Niagara Mohawk-Dunkirk 4 Units	C	628	1950	Lake Erie	Chautauqua Co.	OT ¹	PR (4)
NY	Orange & Rockl-Bowline Pt #162	O	1242	1972/1974	Hudson R	Rockland Co.	OT	RV NR
NY	Orange & Rockl-Lovett 5 Units	O	795	1949	Hudson R	Rockland Co.	OT ¹	RV PR
NY	Pwr Auth-NY-Astoria #6	O	800	1976	East River	New York Co.	OT ¹	RV PR
NY	Pwr Auth-NY-Fitzpatrick 1 Unit	N	821	1975	Lake Ontario	Oswego Co.	OT	PR PR
NY	Pwr Auth-NY-Indian Pt. #3	N	976	1976	Hudson R	Westchester Co.	OT	PR PR
NY	Rochester G&E-Beebe	C/O	184	1914	Genesee R	Monroe Co.	OT ¹	RV PR
NY	Rochester G&E-Ginna 1 Unit	N	490	1970	Lake Ontario	Wayne Co.	OT ¹	RV PR
NY	Rochester G&E-Russell 4 Units	C	253	1949	Lake Ontario	Monroe Co.	OT ¹	PR PR
PR	PR WR Auth-Aguirre	O	920		Jobes Bay	San Juan	OT	RV PN

REGION II

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
PR PR WR	Auth-Northcoast	N	583		Atlantic Ocean	Arecibo	OT	RV PN

FOOTNOTES:

- 1 - Closed cycle cooling is not required pursuant to the EPA effluent guidelines.
- (2) - Atlantic City Electric is pursuing a demonstration to ensure compliance with New Jersey water quality criteria applicable to B.L. England and Deepwater.
- (3) - Unknown. To be determined at adjudicatory hearing.
- (4) - Niagara Mohawk is conducting fish diversion and impingement/entrainment studies at these plants, but these studies do not necessarily fall within the scope of 316(b) monitoring.
- 5 - Unit #2 has closed-cycle cooling.
- 6 - PSEGS originally submitted a Type I, 316(a) demonstration. Company is presently in the process of supplementing it with a Type III demonstration.
- 7 - Company maintains that facility falls within scope of Grandfather Clause. To date, state authorities have not responded.
- 8 - The utility hopes to demonstrate that Sayreville meets water quality standards 70-80% of the time.

CODES:

- CT - Court hearings.
- PN - Final NPDES permit has not been issued for this facility.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- NR - Monitoring not required as closed-cycle cooling is imposed in the final NPDES permit pursuant to the effluent guidelines or 316(b).
- RV - Request under review by regulatory agency.

REGION III

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
DE	Delmarva P&L-Indian River #1-3	C	345	1957/59/70	Indian R	Sussex Co.	OT	PR PR
DE	Delmarva P&L-Edgemoor 5 Units	O	789	1951-1973	Delaware R	New Castle Co.	OT	PR (1) PR
MD	B G & E-Chas Crane 2 Units	O	386	1962	Salt Peter Cr	Baltimore Co.	OT	PR (6) PR
MD	B G & E-Wagner 4 Units	C	980	1956	Patapsco R	Anne Arundel Co.	OT	PR (6) PR
MD	B G & E-Riverside 5 Units	O	345	1942	Patapsco R	Baltimore Co.	OT	PR (6) PR
MD	B G & E-Calvert Cliffs 2 Units	N	845	1974/1977	Chesapeake Bay	Calvert Co.	OT	PR PR
MD	Delmarva P&L-Vienna 4 Units	O	229	1947-1971	Nanticoke R	Dorchester Co.	OT/MT	(2) (2)
MD	PEPCO-Chalk Pt 2 Units	C/O	1330	1964	Patuxent R	Prince Geo. Co.	OT	PR PR
MD	PEPCO-Dickerson 3 Units	C/GT	603	1956/60/62	Potomac R	Montgomery Co.	OT	PR PR
MD	PEPCO-Morgantown 2 Units	C/GT	1182	1970/1971	Potomac R	Charles Co.	OT	PR PR
MD	Potomac Edison-Paul R. Smith	C	160	1923	Potomac R	Washington Co.	OT	PR
PA	Duquesne Light-Beaver Valley	N	1704	1976/1981	Ohio R	Beaver Co.	NT	EX PR
2 Units								
PA	Duquesne Light-Elrama	C	525	1952	Monongahela R	Allegheny Co.	OT	PR
PA	Duquesne Light-Cheswick 1 Unit	C	570	1970	Allegheny R	Allegheny Co.	OT	PR PP3
PA	Duquesne Light-Shippingport	N	100		Ohio R	Beaver Co.		
PA	Luzerne Flec-Hunlock #1	C	46	1958	N Br Susquehanna R	Luzerne Co.	OT	EX PR
PA	Metro Edison-Crawford	C/O	117	1924	Susquehanna R	Dauphin Co.	OT	PR
PA	Metro Edison-3 Mi Isl Nu/Sta #1	N	792	1974	Susquehanna R	Dauphin Co.	NT	EX PR
PA	Metro Edison-C Titus 3 Units	C	225	1951/51/53	Schuylkill R	Berks Co.	OT	EX PR
PA	Metro Edison-Portland 2 Units	C	427	1958/1962	Delaware R	Northampton Co.	OT	EX (5)
PA	PA Pwr-New Castle 5 Units	C	426	1939	Beaver R	Lawrence Co.	OT	PR PR
PA	PA Pwr-Bruce Mansfield	C	1670		Ohio R	Beaver Co.	NT	EX PR
PA	PA P/L Co-Holtwood Steam Elec Sta	C	105	1925/1954	Susquehanna R	Lancaster Co.	OT	PR
3 Units								
PA	PA P/L Co-Keystone Sta 2 Units	C	1872	1967	Crooked Cr	Armstrong Co.	CT	EX
PA	PA P/L Co- Brunner Island ⁹	C	2642		Susquehanna R	York Co.	OT	PR

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
PA	PA P/L Co-Martins Cr 4 Units	C/O	318	1955-1977	Delaware R	N. Hampton Co.	OT/NT	EX PR
PA	PA P/L Co-Sunbury	C/GT	416	1949	Susquehanna R	Snyder Co.	OT	PR
PA	PA P/L Co-Montour Sta 3 Units ⁹	C	823	1972	Susquehanna R	Montour Co.	CT	EX
PA	PA P/L Co-Susquehanna Sta #182 ⁹	N	2100	1980/1982	Susquehanna R	Luzerne Co.	NT	EX
PA	Penelec-Shawville 4 Units	C/O	640	1954	Susquehanna R	Clearfield Co.	COM	PR
PA	Penelec-Erie	C	100		Lake Erie	Erie Co.		PR PR
PA	Penelec-Seward Sta 4 Units	C	268	1921	Conemaugh R	Indiana Co.	CT	PR
PA	Penelec-Warren Sta 2 Units	C	73	1948	Allegheny R	Warren Co.	OT	PR
PA	Penelec-Front Sta	C	119		Lake Erie	Erie Co.	OT	EX
PA	Penelec-Homer City 2 Units	C	1320	1969	Two Lick Cr	Indiana Co.	CT	FX
PA	Penelec-Conemaugh ⁹	C	1872	1970	Conemaugh R	Indiana Co.	CT	EX
PA	Penelec-Williamsburg	C	30		Juniat R	Blair Co.	COM	PR
PA	Phila Elec-Delaware	O/GT	516	1920	Delaware R	Philadelphia Co.	OT	PR
PA	Phila Elec-Peach Bottom 2 Units	N	2130	1973/1974	Susquehanna R	York Co.	OT	RV PR
PA	Phila Elec-Richmond 4 Units	O	1082	1925	Delaware R	Northampton Co.	OT	
PA	Phila Elec-Chester Sta 5 Units	O	273	1918	Delaware R	Delaware Co.	OT	PR
PA	Phila Elec-Schuylkill Sta 5 Units	O	344	1903/1915	Schuylkill R	Philadelphia Co.	OT	PR
PA	Phila Elec-Limerick ⁹ #182	N	2130	1981/1982	Schuylkill R	Montgomery Co.	NT	EX
PA	Phila Elec-Cromby 2 Units	C/O/GT	693	1954	Schuylkill R	Chester Co.	OT	PR
PA	Phila Elec-Barbadoes Sta 2 Units	O/GT	221	1923/1949	Schuylkill R	Montgomery Co.	OT	PR
PA	Phila Elec-Eddystone 2 Units	C	707	1960	Delaware R	Delaware Co.	OT	PR
PA	Phila Elec-Southwark 2 Units	O	420	1947	Delaware R	Philadelphia Co.	OT	
PA	W Penn Pwr-Mitchell 3 Units	C	448	1948	Monongahela R	Washington Co.	OT	PR
PA	W Penn Pwr-Springdale Sta 2 Units	C	215	1920/1945	Allegheny R	Allegheny Co.	OT	PR
PA	W Penn Pwr-Hatfield Sta 3 Units	C	1728	1969	Monongahela R	Greene Co.	NT	PR
PA	W Penn Pwr-Milesburg Sta 2 Units	C	46	1950	Spring Cr	Centre Co.	OT	PR
PA	W Penn Pwr-Armstrong Sta 2 Units	C	326	1958	Allegheny R	Armstrong Co.	OT	PR

REGION III

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
VA	Appalachian Pwr Co-Glen Lyn	C	401	1918/1920	New R	Niles Co.	OT	PR
	5 Units							
VA	Appalachian Pwr Co-Clinch R	C	669	1958	Clinch R	Russell Co.	MT	EX PR
	3 Units							
VA	PEPCO-Potomac River Gen Sta	C	481	1949	Potomac R	City of Alex.	OT	EX PR
VA	VEPCO-Potomac Pt 4 Units	O	587	1948	Potomac R	Prince Wm. Co.	OT/MT	(7) PR
VA	VEPCO-Portsmouth 4 Units	O	624	1953	Elizabeth R	Chesapeake Co.	OT	(7) PR
VA	VEPCO-Surry 2 Units	N	1576	1972/1973	James R	Surry Co.	OT	PR
VA	VEPCO-Yorktown 2 Units	O	1226	1957	York R	York Co.	OT	(7) PR
VA	VEPCO-Richmond Brema Bluff	C	250	1931/1950	James R	Fluvanna Co.	OT	(7) PR
	2 Units							
VA	VEPCO-Chesterfield 6 Units	O	1441	1944	James R	Chesterfield Co.	OT	(7) PR
WV	Appalachian Pwr-Philipsborn	C	1960		Ohio R	Mason Co.	OT	PR
WV	Appalachian Pwr-John Amos 3 Units	C/O	2950	1971	Little Scary Cr	Kanawha Co.	CT	EX
WV	Appalachian Pwr-Cabin Cr 7 Units	C/G	274	1914/1919	Kanawha R	Kanawha Co.	OT	
WV	Monongahela Pwr-Albright 3 Units	C	403	1952	Cheat R	Preston Co.	OT/MT	EX PR
WV	Monongahela Pwr-Willow Is 2 Units	C	215	1949	Ohio R	Pleasants Co.	OT	
WV	Monongahela Pwr-Harrison 2 Units	C		1950/1972	W Fork R	Harrison Co.	NT	EX PR
WV	Monongahela Pwr-Fort Martin	C	1152	1967	Monongahela R	Monongalia Co.	CT	EX
	2 Units							
WV	Monongahela Pwr-Pleasants ⁹		1252		Monongahela R		CT	EX
WV	Monongahela Pwr-Rivesville	C	110	1919/1943	Monongahela R	Marion Co.	OT	PR
	2 Units							
WV	Ohio Pwr-Kammer 3 Units	C	675	1958	Ohio R	Marshall Co.	OT	PR
WV	Ohio Pwr-Mitchell 2 Units	C/O	1600	1971	Ohio R	Brook Co.	CT	EX
WV	VA Elec & Pwr Co Mt. Storm ⁹	C/GT	1914	1965	Stony R	Grant Co.	COM	

NOTE: The State of Maryland Water Resources Administration anticipates promulgating regulations this fall relative to thermal discharge. This action probably will result in several Maryland power plants requesting a 316(a) waiver from the standards.

FOOTNOTES:

- 1 - Thermal mixing zone data approved; 316 (a) demonstration not required.
- (2) - Requirements not known.
- 3 - Issue of monitoring under adjudicatory process.
- * - Met-Ed has not made a request for a 316(b) demonstration. Impingement/entrainment studies may be necessary, however, to satisfy requirements of NPDES permit. Studies would be initiated after a closed cycle cooling system becomes operational (July 1979).
- (5) - Impingement studies have been performed at the Portland Station by the Delaware River Anadromous Fishery Project (Aug. 1975 - May 1976). Entrainment studies are tentatively scheduled to begin in 1977. Studies may not be performed, however, because it has not been determined if they are necessary. These two sets of studies address requirements of the NPDES permit itself and are not presently a part of a 316(b) requirement that has been requested by Met-Ed.
- (6) - These plants must satisfy water quality standards for the state of Maryland.
- (7) - State of Virginia is reviewing temperature profile data to determine if a thermal mixing zone study or a 316(a) demonstration is needed.
- 8 - Meets state water quality standards.
- 9 - Facility or additional unit is under construction.

CODE:

- AP - Request approved.
EX - Plant exempt.
PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RV - Request under review by regulatory agency.

REGION IV

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
AL	AL Pwr Co-Barry 5 Units	C	1525	1954	Mobile R	Mobile Co.	OT	PR
AL	AL Pwr Co-Farley 2 Units	N	1658	1977/1979	Chattahoochee R	Houston Co.	MT	NA
AL	AL Pwr Co-Gorgas 6 Units	C	1282	1929	Black Warrior R	Walker Co.	OT	RV
AL	AL Pwr Co-Greene Co. 2 Units	C	500	1965	Black Warrior R	Green Co.	OT	AP
AL	AL Pwr Co-Barton 4 Units	N	4636	1985-1987	Coosa R	Chilton Co.	MT	NA
AL	AL Pwr Co-Gaston 5 Units	C	1880	1960	Coosa R	Shelby Co.	NT	PR ¹
AL	TVA-Bellefonte 2 Units	N	2426	1980/1981	Tennessee R	Jackson Co.	CT	NA
AL	TVA-Browns Ferry 3 Units	N	3201	1973/74/76	Tennessee R	Limestone Co.	MT	EX ²
AL	TVA-Colbert 5 Units	C	1396	1955	Tennessee R	Colbert Co.	CT	AP
AL	TVA-Widows Creek 8 Units	C	1978	1952	Tennessee R	Jackson Co.	OT	RV
FL	City of Tallahassee-Purdum Sta	O/G	118	1951	St Marks R	Wakulla Co.	OT	EX
7 Units								
FL	FL Pwr Corp-Anclote 2 Units	O	1030	1974/1977	Gulf of Mexico	Pinellas Co.	OT	PR
FL	FL Pwr Corp-Bartow 3 Units	O/G	494	1958	Tampa Bay	Pinellas Co.	OT	
FL	FL Pwr Corp-Crystal R 2 Units	N/O	1789	1976	Gulf of Mexico	Citrus Co.	OT	RV
FL	FL Pwr Corp-Higgins 3 Units	O/G	138	1951	Tampa Bay	Pinellas Co.	OT	EX
FL	FL P&L Co-St Lucie Sta #1	N	810	1976	Atlantic Ocean	St. Lucie Co.	OT	AP
FL	FL P&L Co-St Lucie Sta #2	N	810	1980	Atlantic Ocean	St. Lucie Co.	OT	
FL	FL P&L Co-Riviera Sta 4 Units	O/G	739	1986	Lake Worth	Palm Beach Co.	OT	EX
FL	FL P&L Co-Cape Canaveral 2 Units	O/G	804	1965	Indian R	Brevard Co.	OT	AP
FL	FL P&L Co-Cutler 4 Units	O/G	346	1948/1949	Biscayne Bay	Dade Co.	OT	AP
FL	FL P&L Co-Ft. Meyers 2 Units	O	558	1958	Caloosahatchee R	Lee Co.	OT	RV
FL	FL P&L Co-Lauderdale 2 Units	O/G	312	1926/1957	Dania Canal	Broward Co.	OT	EX
FL	FL P&L Co-Manatee	O	1700		None	Manatee Co.	CL	NA
FL	FL P&L Co-Martin	O	2550		None	Martin	CP	NA
FL	FL P&L Co-Palatka 2 Units	O/G	110	1951	St. John's R	Putnam Co.	OT	EX
FL	FL P&L Co-Putnam 3 Units	O	500		St. John's R	Putnam Co.	MT	NA

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
FL	FL P&L Co-Port Everglades	O/G	1255	1960	Lake Mable	Broward Co.	OT	EX PR
FL	FL P&L Co-Sanford 3 Units	O	1028	1926/1959	St. John's R	Volusia Co.	OT/CL	EX/NA PR
FL	FL P&L Co-South Dade 2 Units	N	2600	1980s		Dade Co.	MT	NA
FL	FL P&L Co-Turkey Point 4 Units	N/O	2324	1972/1973	Atlantic Ocean	Dade Co.	SC	NA NA
FL	FL P&L Co-DeSoto	N	1300		Atlantic Ocean	Desoto Co.	SC	NA
FL	Gulf Pwr Co-Crist Sta 7 Units	C/O/G	1062	1945-1973	Escambia R	Escambia Co.	OT/CT	NA AP
FL	Gulf Pwr Co-Scholtz 2 Units	C	90	1953	Apalachicola R	Jackson Co.	OT	EX PR
FL	Gulf Pwr Co-Smith 2 Units	C	387	1965/1967	North Bay	Bay Co.	OT	EX PR
FL	Gulf Pwr Co-Ellis	C	1000		Choctawhatchee R	Carryville	CT	NA
FL	Jackvl Elec Light Plt-Kennedy	O	478	1955	St. John's R	Duval Co.	OT	EX PR
	3 Units & 6 GT							
FL	Jackvl Elec Light Plt-Northside	O	1370	1966	St. John's R	Duval Co.	OT	AP ³ AP ⁴
	3 Units & 6 GT							
FL	Jackvl Elec Light Plt-Southside	O	357	1950	St. John's R	Duval Co.	OT	EX AP
	5 Units & 2 GT							
FL	Orlando Util Comm-Indian R	O/G	1000	1960	Indian R	Brevard Co.	OT	EX PR
	2 Units							
FL	Tampa Elec Co-Big Bend Sta	C	1336	1970	Tampa Bay	Hillsborough Co.	OT	PR PR
	3 Units							
GA	GA Pwr Co-Arkwright 4 Units	G	131	1941	Mulgee R	Bibb Co.	OT	EX
GA	GA Pwr Co-Atkinson 4 Units	C/G	256	1930	Chattahoochee R	Cobb Co.	OT	EX
GA	GA Pwr Co-Bowen 2 Units	C	1595	1971	Etowah R	Bartow Co.	CT	NA
GA	GA Pwr Co-Hammond 4 Units	C	953	1954	Coosa R	Floyd Co.	OT	EX
GA	GA Pwr Co-Harlee Branch 4 Units	C	1746	1965	Lake Sinclair	Putnam Co.	OT	EX
GA	GA Pwr Co-McManus 2 Units	O	144	1952	Turtle R	Glynn Co.	OT	EX
GA	GA Pwr Co-Mitchell 3 Units	C	218	1948	Flint R	Dougherty Co.	OT	EX
GA	GA Pwr Co-Yates 5 Units	C/G	1487	1950	Chattahoochee R	Coweta Co.	OT/CT	EX/NA

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
GA	GA Pwr Co-Hatch 2 Units	N	1581	1974/1979	Altamaha R	Appling Co.	MT	NA
GA	GA Pwr Co-Wanslay	C	1900		Yellow Dirt Cr	Carroll Co.	CT	NA
GA	GA Pwr Co-Scherer	C	3800	1981	Ocmulgee R	Monroe Co.	NT	NA
GA	GA Pwr Co-Vogtle 2 Units	N	2226	1983/1984	Savannah R	Burke Co.	NT	NA
GA	Savannah E&P Co-Effingham	O	163		Savannah R	Chatham Co.	OT	
GA	Savannah E&P Co-Riverside	G	102		Savannah R	Chatham Co.	OT	EX
GA	Savannah E&P Co-Pt Wentworth	O/G	334		Savannah R	Chatham Co.	OT	EX
KY	Big Riv Rur Elec Coop-Coleman	C/G	521	1969	Ohio R	Hancock Co.	OT	EX PR
	3 Units							
KY	Big Riv Rur Elec Coop-Reid	C	830	1965	Green R	Henderson Co.	OT	EX PR
	1 Unit							
KY	Cinci Elec & Gas-East Bend	C	1200				CT	NA
KY	East KY Rur Elec Coop-Spurlock	C	300	1976	Ohio R	Mason Co.	MT	NA NA ⁵
KY	KY Util Co-Ghent	C	2000			Ghent	CT	NA PP
KY	KY Util Co-Green River 4 Units	C	264	1950	Green R	Muhlenberg Co.	OT	RV
KY	Louisville G&E Co-Cane Run	C/G	1017	1954	Ohio R	Jefferson Co.	OT	EX PR
	6 Units							
KY	Louisville G&E Co-Mill Creek	C	1527	1972	Ohio R	Jefferson Co.	OT	EX PR
	1 Unit							
KY	Louisville 4 Units G&E Co-Trimble	C	2300	1981	Ohio R	Trimble Co.	NT	NA
KY	Owensboro Mun-Smith	C	400		Ohio R	Daviess Co.	OT	PR PR
KY	TVA-Paradise	C	2558		Green R	Muhlenberg Co.	CT	EX PR ⁶
KY	TVA-Shawnee 10 Units	C	1750	1953	Ohio R	McCracken Co.	OT	EX PR
MS	MS Pwr Co-Watson 5 Units & 1 CT	C/O/G	1051	1957-1970	Biloxi R	Harrison Co.	OT/CT/SC	PR PR
MS	MS P&L Co-Andrus	O	750			Washington Co.	OT	
MS	MS P&L Co-Grand Gulf 2 Units	N	2500	1979/1981	Mississippi R	Claiborne Co.	NT	NA
MS	TVA-Yellow Creek 2 Units	N	2600	1983/1984		Tishomingo Co.	CT	NA

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
NC	Carolina P&L Co-Asheville 2 Units C	414	1964	French Broad R	Buncombe Co.	CL		
NC	Carolina P&L Co-Brunswick 2 Units N	1642	1977/1974	Cape Fear Estuary	Brunswick Co.	OT	RV	RV7
NC	Carolina P&L Co-Cape Fear 6 Units C	421	1923	Cape Fear R	Chatham Co.	CT	EX	PR
NC	Carolina P&L Co-Lee 3 Units C/G	402	1951	Neuse R	Wayne Co.	CP		
NC	Carolina P&L Co-Roxboro 4 Units C	2558	1966-1980	Hico Creek	Person Co.	CL/CT		
NC	Carolina P&L Co-Sutton 3 Units O/G	672	1954	Cape Fear R	New Hanover Co.	CP	EX	
NC	Carolina P&L Co-Harris 4 Units N	3600	1984-1990	Buckhorn Cr	Wake Co.	NT	NA	
NC	Carolina P&L Co-Mayo 2 Units C	1440	1982/84	Hico Creek	Person Co.	NT	NA	
NC	Duke Pwr Co-Marshall Sta 4 Units C/O	2000	1965	Lake Norman	Catawba Co.	OT	AP	AP
NC	Duke Pwr Co-Riverbend Sta C/O/G	751	1929	Lake Mtn Isl	Gaston Co.	OT	AP	AP
11 Units								
NC	Duke Pwr Co-Allen Sta 5 Units C	1155	1957	Lake Wylie	Gaston Co.	OT	RV	AP
NC	Duke Pwr Co-Buck Sta 9 Units C/O	519	1926	Lake High Rock	Rowan Co.	OT	EX	AP
NC	Duke Pwr Co-Cliffside Sta 5 Units C	781	1940	Broad R	Rutherford Co.	OT/CT	NA	AP
NC	Duke Pwr Co-Dan River Sta 3 Units C	284	1949	Dan R	Rockingham Co.	OT	NA	AP
NC	Duke Pwr Co-Bellews Cr C	2160		Bellews Cr	N. Winston	CC	NA	
NC	Duke Pwr Co-McGuire 2 Units N	2360	1978/1979	Lake Norman	Mecklenburg Co.	OT		
NC	Duke Pwr Co-Perkins 3 Units N	3840	1983/85/87	Yadkin R	Davie Co.	MT	NA	
SC	Carolina P&L Co-HB Robinson Sta N/C	975	1960	Lake Robinson	Darlington Co.	CL	RV	AP
2 Units								
SC	Duke Pwr Co-Catawba 2 Units N	2306	1979/1980	Lake Wylie	York Co.	MT	NA	
SC	Duke Pwr Co-Oconee 3 Units N	2613	1973/73/74	Keowee Lake	Oconee Co.	OT		AP
SC	Duke Pwr Co-Lee 3 Units C/G	345	1951	Saluda R	Anderson Co.	OT	PR	PR
SC	Duke Pwr Co-Cherokee 3 Units N	3840	1984/86/88	Broad R	Cherokee Co.	MT	NA	
SC	SC Elec & Gas-Canadys 3 Units C/G	490	1962	Edisto R	Colleton Co.	OT/CP	PR	PR
SC	SC Elec & Gas-Hagood 3 Units O/G	98	1947	Ashley R	Charleston Co.	OT	EX	PR
SC	SC Elec & Gas-McMeekin 2 Units G	275	1958	Lake Murray	Lexington Co.	OT	EX	

REGION IV

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
SC	SC Elec & Gas-Summer 1 Unit	N	900	1979	Monticello Res	Fairfield Co.	OT	AP
SC	SC Elec & Gas-Wateree 2 Units	C	772	1970	Wateree R	Richland Co.	CT	PR
SC	SC Elec & Gas-Williams 1 Unit	O	1170	1973	Back R/Cooper R	Berkly Co.	MT	PR
SC	SC Elec & Gas-Urghart 3 Units	G	250	1953	Savannah R	Aiken Co.	OT	PR
SC	SC Pub Serv-Georgetown	C	630		Turkey Cr	Georgetown Co.	CL/CT	PR
SC	SC Pub Serv-Grainger 2 Units	C	163	1966	Waccamaw R	Horry Co.	OT	PR
SC	SC Pub Serv-Jeffries 4 Units	C/O	446	1953/1970	Cooper R	Berkeley Co.	OT	EX
TN	TVA-Allen 3 Units	C/G	990	1958	Mississippi R	Shelby Co.	OT	EX
TN	TVA-Bull Run 1 Unit	C	950	1967	Clinch R	Anderson Co.	OT	RV
TN	TVA-Gallatin 4 Units	C	1255	1956	Cumberland R	Sumner Co.	OT	RV
TN	TVA-Johnsonville 10 Units	C	1485	1951	Tennessee R	Humphreys Co.	OT	RV
TN	TVA-Kingston 9 Units	C	1700	1954	Clinch/Emory R	Roane Co.	OT	RV
TN	TVA-Watts Bar	C	240		Tennessee R	Rhea Co.	OT	PR*
TN	TVA-Cumberland 2 Units	C	2600	1973	Cumberland R	Stewart Co.	OT	PR
TN	TVA-Sevier 4 Units	C	846	1955	Holston R	Hawkins Co.	OT	PR*
TN	TVA-Hartsville 4 Units	N	4932	1981-1982	Cumberland R	Trousdale Co.	NT	NA
TN	TVA - Phipps Bend 2 Units	N	2466	1984	Holston R	Hawkins Co.	NT	NAX
TN	TVA-Sequoyah 2 Units	N	2296	1977/1978	Tennessee R	Hamilton Co.	NT	
TN	TVA-Watts Bar 2 Units	N	2354	1978/1979	Chickamauga Res	Rhea Co.	NT	NA

FOOTNOTES:

- 1 - The NPDES permit requires that proposed modifications to the intake and discharge structures be made by June 30, 1977. The permit also requires that 316(a) data be collected in the event thermal limitations cannot be met.
- 2 - Plant will have 316(a) determination applicable to next NPDES permit due to multiple mode of cooling operation.
- 3 - A public notice for the NPDES permit for Units 1, 2, & 3 has been issued. The public notice gives tentative approval of the once-through system requested in 316 demonstrations.
- 4 - A fish return system has been proposed and EPA intends to include in the NPDES permit a requirement to study and report on the effectiveness of the fish return system.
- 5 - Groundwater intake.
- 6 - Impingement data approved for these facilities; entrainment monitoring is ongoing.
- 7 - Offstream cooling required for 316(b); a judicatory procedure is underway.

CODES:

- AP - Request approved.
EX - Plant exempt.
NA - Not applicable.
PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RV - Request under review by regulatory agency.

REGION V

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
IL	Cen IL Lgt Co-Wallace 7 Units	C/G	360	1925	Illinois R	Tazewell Co.	OT	EX PR
IL	Cen IL Lgt Co-Edwards 3 Units	C	725	1960/68/72	Illinois R	Peoria Co.	OT	EX PR
IL	(Cen IL Lgt Co-Duck Creek)	C	800		Duck Creek	Fulton Co.	CL	EX PR
IL	Cen IL Lgt Co-Keystone-	G	54		Illinois R	Peoria Co.	OT	EX PR
	Bartonville							
IL	Cen IL Pub Serv-Grand Tower	C	189	1950	Mississippi R	Jackson Co.	OT	EX PR*
	2 Units							
IL	Cen IL Pub Serv-Meredosia 4 Units	C/O	550	1948-1975	Illinois R	Morgan Co.	OT/MT	EX PR*
IL	Cen IL Pub Serv-Coffeen 2 Units	C	840	1965	Coffeen Lake	Montgomery Co.	CL	(1)
IL	Cen IL Pub Serv-Hutsonville	C/O	214	1940	Wabash R	Crawford Co.	OT	EX PR*
	4 Units							
IL	(Cen IL Pub Serv-Newton) 1 Unit	C	550	1977	Newton Lake	Jasper Co.	CL	PR
IL	Com Edison-Will County 4 Units	C	1269	1955	Chicago Canal	Will Co.	OT	EX PR ²
IL	Com Edison-Joliet 4 Units	C	1787	1917	Des Plaines R	Will Co.	OT	EX PR ²
IL	Com Edison-Dresden #1	N	200	1959	Illinois R	Grundy Co.	OT	EX PR
IL	Com Edison-Zion 2 Units	N	1786	1973/1973	Lake Michigan	Lake Co.	OT	AP ¹² RV
IL	Com Edison-Waukegan 4 Units	C	933	1923	Lake Michigan	Lake Co.	OT	AP ¹² RV
IL	Com Edison-Sabrooke 4 Units	O	92	1949	Rock R	Winnebago Co.	OT	EX PR
IL	Com Edison-Kincaid 2 Units	C	1319	1967	Lake Sangchris	Christian Co.	CL	RV PR
IL	Com Edison-Fisk 2 Units	C/G	547	1903/1914	So. Br. Chicago R	Cook Co.	OT	EX (2)
IL	Com Edison-Dixon	C/G	119		Rock R	Lee Co.	OT	EX PR
IL	(Com Edison-Byron) 2 Units	N	2240	1980/1982	Rock R	LaSalle Co.	NT	EX EX ⁵
IL	(Com Edison-LaSalle) 2 Units	N	2156	1979/1980	Illinois R	LaSalle Co.	CP	EX EX ⁵
IL	(Com Edison-Collins)	C/O	2601		Illinois R	Grundy Co.	CP	EX PR
IL	(Com Edison-Braidwood) 2 Units	N	2240	1981/1982	Kankakee R	Will Co.	CL	EX EX ⁵
IL	(Com Edison-Carroll Co) 2 Units	N	2200		Mississippi R	Carroll Co.		EX EX ⁵
IL	Com Edison-Quad Cities #1&2	N	1600	1972/1972	Mississippi R	Rock Island Co.	OT/SC	RV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
IL	Elec Energy Inc-Joppa 6 Units	C	1100	1953	Ohio R	Massac Co.	OT	RV
IL	IA IL G&E Co-Moline 5 Units	G/O	79	1887/1913	Mississippi R	Rock Island Co.	OT	EX
IL	(IA IL G&E Co-Moline)	G/O	40		Mississippi R	Rock Island Co.	OT	RV
IL	Illinois Power-Vermilion 2 Units	C/O	186	1955	Reservoir	Vermilion Co.	COM	PR
IL	Illinois Power-Wood River 5 Units	C/O	650	1949	Mississippi R	Madison Co.	OT	PR
IL	Illinois Power-Havana 5 Units	C/O	230	1947	Illinois R	Mason Co.	OT	PR
IL	Illinois Power-Baldwin 2 Units	C	1210	1970	Kaskaskia R	Randolph Co.	CP	EX
IL	(Illinois Power-Baldwin)		600		Kaskaskia R	Randolph Co.		
IL	Illinois Power-Hennepin 2 Units	C/G	306	1953	Illinois R	Putnam Co.	OT	PR
IL	(Illinois Power-Clinton 2 Units)	N	1866	1981/1984	Salt Creek	Dewitt Co.	CL	AP
IL	Mt Carmel Pub Util	C/O	21		Wabash R	Wabash Co.	OT	EX
IL	Natl Steel-Midwest Div/Rep Steel							PR
IL	Peru Light Dept	C	15		Illinois R		OT	EX
IL	So IL Power Coop	C	114		Lake of Egypt	Williamson Co.	OT	PR
IL	(So IL Power Coop)	C	170		Lake of Egypt	Williamson Co.	OT	PR
IL	Springfield W L & P	C	350		Lake Springfield	Sangamon Co.	CL	PR
IL	(Springfield W L & P)	C	384		Lake Springfield	Sangamon Co.	CL	PR
IL	Western IL Power Coop-Pearl	C	22		Illinois R	Pike Co.	OT	EX
IL	Union Electric Co-Venice	C/O/G	494		Mississippi R	Madison Co.	OT	EX
IL	Union Electric Co-Cahokia	O	212		Mississippi R	St. Clair Co.	OT	PR ³
IL	US Steel-Chicago S Works				Calumet R/Lake Michigan	Cook Co.		RV
IL	Winnetka Mun Elec & Water	C/O	26		Lake Michigan		OT	EX
IN	Com Edison-State Line 4 Units	C/G	972	1929	Lake Michigan	Lake Co.	OT	RV
IN	IN-KY-Elec-Clifty Creek 6 Units	C	1304	1955	Ohio R	Jefferson Co.	OT	AP
IN	Indiana-Mich Elec-Sullivan	C	450		Wabash R	Sullivan Co.	OT	RV

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ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
IN	Indiana-Mich Elec-Tanners Creek	C	1100	1951	Ohio R	Dearborn Co.	OT	AP PR
	4 Units							
IN	Indiana-Mich Elec-Wishehaka	C	394		St. Joseph R	St. Joseph Co.	OT	RV PR
IN	IN Statewide Rur Elec Coop-	C	233		White R	Pike Co.	OT	AP ¹³ PR
	Hoosier Eng							
IN	(IN Statewide Rur Elec Coop-	C	900		Turtle Lake	Sullivan Co.	CL	RV PR
	Merom Facility)							
IN	Indianapolis P&L-Perry K	C/G	59		White R	Marion Co.	COM	EX EX ⁵
IN	Indianapolis P&L-Petersburg	C	724	1967/69	White R	Pike Co.	OT	AP ¹³ PR
	4 Units							
IN	Indianapolis P&L-Martinsville	C	364		White R	Morgan Co.	OT	RV RV
IN	Indianapolis P&L-Indianapolis	C	935		White R	Marion Co.	COM	AP ¹³ AP ²
IN	No Indiana Pub Serv-Bailly	C	615	1962	Lake Michigan	Porter Co.	COM	PR PR
	2 Units							
IN	(No Indiana Pub Serv-Bailly)	N	645	1980	Lake Michigan	Porter Co.	NT	PR PR
	1 Unit							
IN	No Indiana Pub Serv-Michigan Cty	C/G	736	1930	Lake Michigan	La Porte Co.	COM	PR ¹⁴ PR
	3 Units							
IN	No Indiana Pub Serv-Mitchell	C/G	529	1956	Lake Michigan	Lake Co.	OT	PR PR
	4 Units							
IN	(No Indiana Pub Serv-Schaefer)	C	1077		Kankakee R	Lake Co.	CT	EX PR
IN	Pub Serv of IN-Cayuga 2 Units	C	1018	1970	Wabash R	Vermillion Co.	OT	RJ PR
IN	Pub Serv of IN-Edwardsport	C	144	1918/1944	White R	Knox Co.	OT	AP ¹³ PR
	3 Units							
IN	Pub Serv of IN-Noblesville	C	100		White R	Hamilton Co.	OT	AP ¹³ PR
IN	Pub Serv of IN-Wabash River	C	962	1953	Wabash R	Vigo Co.	OT	RJ PR
	6 Units							

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
IN	Pub Serv of IN-Gallagher 4 Units	C/O	600	1958	Ohio R	Floyd Co.	OT	AP PR
IN	(Pub Serv of IN-Marble Hill)	N	2300	1983/1984	Ohio R	Jefferson Co.	MT	EX PR
	2 Units							
IN	So Indiana G&E Co-Culley Sta	C	415	1955	Ohio R	Warrick Co.	OT	RV PR
	3 Units							
IN	So Indiana G&E Co-Alcoa-Warrick	C	380	1970	Ohio R	Warrick Co.	OT	AP PR
	1 Unit							
MI	Bayside (Municipal)	C	35		Lake Michigan	Traverse Co.	OT	EX PR
MI	Consumers Pwr Co-Big Rock 1 Unit	N	75	1962	Lake Michigan	Charlevoix Co.	OT	EX PR
MI	Consumers Pwr Co-Campbell 2 Units	C	639	1962	Lake Michigan	Ottawa Co.	OT	EX RV
MI	(Consumers Pwr Co-Campbell)	C	800		Lake Michigan	Ottawa Co.		
MI	Consumers Pwr Co-Cobb 5 Units	C	510	1948	Lake Muskegon	Muskegon Co.	OT	EX RV
MI	Consumers Pwr Co-Karn & Weadock	C/O	1200	1940	Saginaw Bay	Bay Co.	OT	PR PR
	10 Units							
MI	(Consumers Pwr Co-Karn)	O	1307		Saginaw Bay	Bay Co.	CT	EX PR
MI	(Consumers Pwr Co-Midland)	N	1266	1982/1981	Tittabawassee R	Midland Co.	CL	PR PF
	2 Units							
MI	Consumers Pwr Co-Morrow 4 Units	O	180	1939	Kalamazoo R	Kalamazoo Co.	OT	RV
MI	Consumers Pwr Co-Palisades 1 Unit	N	700	1972	Lake Michigan	Van Buren Co.	MT	EX PR
MI	Consumers Pwr Co-Whiting 3 Units	C	325	1952	Lake Erie	Monroe Co.	OT	EX RV
MI	Detroit Ed-Conners Creek 7 Units	C/O/G	540	1915/1935	Detroit R	Wayne Co.	OT	EX PR
MI	Detroit Ed-Delray 6 Units	O/G	375	1929	Detroit R	Wayne Co.	OT	EX PR
MI	Detroit Ed-Ferri #1	C	158		Lake Erie	Monroe Co.	OT	EX PR
MI	(Detroit Ed-Ferri #2)	N	1093		Lake Erie	Monroe Co.	NT	EX PR
MI	Detroit Ed-Harbor Beach	C	121		Lake Huron	Huron Co.	OT	EX PF
MI	Detroit Ed-Marysville 3 Units	C/G	230	1922/1930	St Clair R	St. Clair Co.	OT	EX PR
MI	Detroit Ed-Monroe 3 Units	C/O	3200	1971	Raisin R	Monroe Co.	OT	RV PR

REGION V

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ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MI	Detroit Ed-Pennsalt	C/O	37		Detroit R	Wayne Co.	OT	PR
MI	Detroit Ed-Port Huron	C/G	11		Black R	St. Clair Co.	OT	PR
MI	Detroit Ed-River Rouge 3 Units	C/O/G	933	1956	Detroit R	Wayne Co.	OT	PR
MI	Detroit Ed-St Clair 7 Units	C/O/G	1905	1953	St Clair R	St Clair Co.	OT	PR
MI	Detroit Ed-Trenton 5 Units	C/O/G	1076	1924	Detroit R	Wayne Co.	OT	PR
MI	Detroit Ed Co-Wyandotte No	C/O/G	54		Detroit R	Wayne Co.	OT	PR
MI	Detroit Ed Co-Wyandotte So		18		Detroit R	Wayne Co.	OT	PR
MI	Det Pub Lighting Co-Mistersky	C	174	1926	Detroit R	Wayne Co.	OT	PR
	(Municipal) 6 Units							
MI	(Det Pub Lighting Co-Mistersky		60		Detroit R	Wayne Co.	OT	PR
	(Municipal))							
MI	Ford Motor Co 4 Units	C/G	345	1931-1939	River Rouge	Wayne Co.	OT	EX
MI	Gladstone (Municipal)	C	6		Lake Michigan	Delta Co.	OT	PR
MI	Hillsdale					Hillsdale		PR
MI	Huron Cement Div					Alpena		PR
MI	IN & Mich Elec-Cook #1	N	859	1974	Lake Michigan	Berrien Co.	OT	PR
MI	(IN & Mich Elec-Cook #2)	N	1060	1977	Lake Michigan	Berrien Co.	OT	PR
MI	James De Young (Munic)	C/G	77		Lake Macutawa	Ottawa Co.	OT	PR
MI	Lansing Bd of WEL-Eckert 6 Units	C	386	1923/1954	Grand R	Ingham Co.	CT	PR
MI	Lansing Bd of WEL-Erikson 1 Unit	C	160	1973	Grand R	Ingham Co.	CT	PR
MI	(Lansing Bd of WEL-Erikson)	C	160		Grand R	Ingham Co.		
MI	Lansing Bd of WEL-Ottawa	C	81		Grand R	Ingham Co.	OT	PR
MI	No Mich Elec Coop-Advance 3 Units	C	40	1953	Lake Charlevoix	Boyer Co.	OT	PR
MI	Up Penla Gen Co-Escanaba	C	29		Lake Michigan	Delta Co.	OT	PR
MI	Up Penla Gen Co-Presque Isle	C	349	1955	Dead R	Marquette Co.	OT	PR
	4 Units							
MI	(Up Penla Gen Co-Presque Isle)	C	160		Lake Superior	Marquette Co.		PR

REGION V

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MI	Up Penla Gen Co-Warden	C/G	18		Lake Superior	Baraga Co.	OT	PR
MI	Shiras (Municipal)	C/G	36		Lake Superior	Marquette Co.	OT	PR
MI	(Shiras (Municipal))		40		Lake Superior	Marquette Co.	OT	EX
MI	Wolverine Elec Coop	O/G	23		Little Rabbit R	Allegan Co.	CT	EX
MI	Wyandotte Mun Serv Comm	C/G	56		Detroit R	Wyandotte Co.	OT	PR
MN	Minn Power & Light-Hibbard	O	130	1931	St Louis R	St Louis Co.	OT	PR
	4 Units							
MN	Minn Power & Light-Aurora	C	130	1953	Lake Colby	St Louis Co.	OT	PR
	2 Units							
MN	Minn Power & Light-Boswell	C	514	1958	Mississippi R	Itasca Co.	OT	PR
	3 Units							
MN	(Minn Power & Light-Boswell)		500		Mississippi R	Itasca Co.	CT	PR
MN	N St Pwr-MN Valley	C/G	46		Minnesota R	Chippewa Co.	OT	PR
MN	N St Pwr-Monticello 1 Unit	N	545	1971	Mississippi R	Wright Co.	OT/MT	RV
MN	N St Pwr-A S King 1 Unit	C	560	1968	St Croix R	Washington Co.	OT/CT	CA
MN	N St Pwr-Riverside 7 Units	C/O/G	208	1911/1916	Mississippi R	Hennepin Co.	OT	(17)
MN	N St Pwr-High Bridge 6 Units	C/O/G	319	1924	Mississippi R	Ramsey Co.	OT	EX
MN	N St Pwr-Black Dog 4 Units	C/G	441	1952	Minnesota R	Dakota Co.	OT/CP	(16)
MN	N St Pwr-Wilmarth 2 Units	G	25	1948	Minnesota R	Blue Earth Co.	OT	PR
MN	N St Pwr-Red Wing	C	28	1949	Mississippi R	Goodhue Co.	OT	EX
MN	N St Pwr-Prairie Is 2 Units	N	1060	1973/1974	Mississippi R	Goodhue Co.	OT/MT	(16)
MN	(N St Pwr-Sherburn)	C	3040		Mississippi R	Martin Co.	CT	EX
MN	Otter Tail Power Co-Hoot Lake	C	127	1948	Otter Tail R	Otter Tail Co.	COM	EX
	3 Units							
MN	Otter Tail Power Co-Big Stone	C	15		Big Stone Lake	Big Stone Co.	OT	EX
OH	Celina Munic Util	C	12			Mercer Co.		EX
OH	Cinci G&E-W C Beckjord 1 Unit	C	461	1969	Ohio R	Clermont Co.	OT	RV

REGION V

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
OH	Cinci G&E-Miami Port 4 Units	C	387	1925/1938	Ohio R	Hamilton Co.	OT	RV PR
OH	Cinci G&E-W H Zimmer 2 Units	N	1980	1978/1984	Ohio R	Clermont Co.	NT	EX EX ⁵
OH	Cleve Elec Illum Co-Ashtabula	C	640	1930	Lake Erie	Ashtabula Co.	OT	EX ⁶ PR
	9 Units							
OH	(Cleve Elec Illum Co-Perry)	N	2410	1980/1982	Lake Erie	Lake Co.	CT	EX EX ⁵
	2 Units							
OH	Cleve Elec Illum Co-Avon Lake	C	1275	1926	Lake Erie	Lorain Co.	OT	PR PR
	9 Units							
OH	Cleve Elec Illum Co-Eastlake	C	1257	1953	Lake Erie	Lake Co.	OT	PR PR
	5 Units							
OH	Cleve Elec Illum Co-Lake Shore	C	518	1911/1941	Lake Erie	Cuyahoga Co.	OT	EX ⁶ PR
	5 Units							
OH	Cleve Dept of Public Util							
OH	Cleve Dept of Pub Util-Lake Rd	C	188		Lake Erie	Cuyahoga Co.	OT	EX ⁶ PR
OH	Columbus Munic Elec Light Dept	C/G	44		Scioto	Franklin Co.	OT	EX PR
OH	Col & So OH Elec Co-Conesville	C	433	1957	Muskingam R	Coshocton Co.	OT	RV PR
	3 Units							
OH	(Col & So OH Elec Co-Conesville)	C	1612		Muskingam R	Coshocton Co.	CT	RV PR
	2 Units							
OH	Col & So OH Elec Co-Picway 1 Unit	C	85	1955	Scioto R	Picaway Co.	OT	AP/PR ⁸ EX ⁹
OH	Col & So OH Elec. Co.-J M Stuart	C	1831	1970	Ohio R	Brown Co.	COM	PR PR
	3 Units							
OH	(Col & So OH Elec Co)		800		Ohio R		CT	EX EX ⁵
OH	(Col & So OH Elec Co)		800		Ohio R		CT	PR EX ⁵
OH	(Dayton Pwr & Lgt-Brush Creek)		1200			Manchester Co.		PR PR
	2 Units							
OH	Dayton Pwr & Lgt-O H Hutchings	C	414	1946	Great Miami R	Montgomery Co.	OT	PR PR
	6 Units							

REGION V

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
OH	(Dayton Pwr & Lgt-Killen)	C	1322		Ohio R	Adams Co.	CT	EX EX ⁵
OH	Dayton Pwr & Lgt-Frank M Tait	C	448	1917/1937	Great Miami R	Montgomery Co.	OT	PR PR
	7 Units							
OH	Dayton Pwr & Lgt-Troy	C	24		Great Miami R	Miami Co.		PR PR
OH	Dover Elec Dept.	C	36		Tuscarawas R	Tuscarawas Co.		EX PR
OH	East Palestine Steam Plant	C	16			Columbia Co.		EX PR
OH	Hamilton Dept Public Util	C	80		Great Miami R	Butler Co.	OT	PR PR
OH	IRC Fibers		21		Lake Erie	Lake Co.	OT	PR PR
OH	Napoleon Municipal	C	17			Henry Co.		PR PR
OH	OH Edison-Norwalk	C/O	31			Huron Co.		PF PR
OH	OH Edison-R E Burger 5 Units	C	544	1944	Ohio R	Bellmont Co.	OT	PR PR
OH	OH Edison-Edgewater 3 Units	C	193	1919/1923	Lake Erie	Lorain Co.	OT	EX ⁶ PR
OH	OH Edison-W Lorain						CT	EX EX ⁵
OH	OH Edison-Gorge Steam 2 Units	C	88	1913/1943	Cuyahoga R	Summit Co.	OT	PR PR
OH	OH Edison-Mad River 3 Units	C	75	1927	Mad R	Clark Co.	CT	PR PR
OH	OH Edison-Niles 2 Units	C	250	1954	Mahoning R	Trumbull Co.	OT	EX PR
OH	OH Edison-W H Sammis 7 Units	C	2304	1959	Ohio R	Jefferson Co.	OT	PR PR
OH	OH Edison-Toronto 3 Units	C	176	1925/1940	Ohio R	Jefferson Co.	OT	PR PR
OH	OH Edison-General Gavin	C	1300		Ohio R	Gallia Co.	CT	EX EX ⁵
OH	(OH Edison-General Gavin)	C	1300		Ohio R	Gallia Co.	CT	EX EX ⁵
OH	OH Power Co-Cardinal 2 Units	C	1180	1967	Ohio R	Jefferson Co.	OT	PR PR
OH	(OH Power Co-Cardinal)	C	615		Ohio R	Jefferson Co.	CT	EX EX ⁵
OH	OH Power Co-Muskingum 5 Units	C	1467	1953	Muskingum R	Morgan Co.	OT/CT	PR PR
OH	OH Power Co-Tidd 2 Units	C	444	1945	Ohio R	Jefferson Co.	OT	PR PR
OH	OH Power Co-Woodcock	C	42		National Quarry	Allen Co.	OT	EX PR
OH	OH Val Elec Corp-Kyger Creek 5 Units	C	1086	1955	Ohio R	Gallia Co.	OT	PR PR

REGION V

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
OH	Painesville Elec Pwr	C	38			Lake Co.		PR PR
OH	St Marys Mun L&P	C/O	22		St. Marys R	Auglaize Co.		PR PR
OH	Shelby Mun Lgt Dept	C/O/G	28			Richland Co.		PR PR
OH	Toledo Edison-Bay Shore 4 Units	C	639	1955	Lake Erie	Lucas Co.	OT	PR EX ⁶
OH	Toledo Edison-Acme 7 Units	C	307	1917/1929	Maumee R	Lucas Co.	OT	PR PR
OH	Toledo Edison-Davis-Besse #1	N	906	1976	Lake Erie	Ottawa Co.	NT	PR EX
OH	(Toledo Edison-Davis-Besse)	N	1812	1983/1985	Lake Erie	Ottawa Co.	NT	PR EX
	2 Units							
OH	Toledo Edison-Water Street	C/O/G	10		Maumee R	Defiance Co.		PR PR
OH	Union Carbide Corp-Marietta Sta		160		Ohio R	Washington Co.	OT	PR PR
OH	Willard El Sys		5			Huron Co.		PR EX
WI	Dairyland Power Coop-Alma	C	187	1947	Mississippi R	Buffalo Co.	OT	PR PR
	5 Units							
WI	(Dairyland Power Coop-Alma #6	C	350		Mississippi R	Buffalo Co.	OT	PR AP
WI	Dairyland Pwr Coop-E J Stoneman	C	52	1950	Mississippi R	Grant Co.	OT	PR EX
WI	Dairyland Pwr Coop-Genoa	N/C	419		Mississippi R	Vernon Co.	OT	PR EX
WI	Lk Supr Dist Pwr-Bay Front Sta	C/G	82	1917	Lake Superior	Ashland Co.	OT	PR EX
WI	Mad G&E Co-Blount Sta 7 Units	C/G	195	1902/1923	Lake Monona	Dane Co.	OT	PR EX
WI	Manitowoc Pub Util Pwr Plant	C	69	1964	Lake Michigan	Manitowoc Co.		PR EX
	5 Units							
WI	Menasha Elec & Water Util 4 Units	C	32	1949-1964	Lake Winnebago	Winnebago Co.		PR PR
WI	N States Pwr-French Is 2 Units	G	25	1940	Mississippi R	LaCrosse Co.	OT	PR EX
WI	(N States Pwr Co-Tyrone)	N	1150		Chippewa R	Dunn Co.	MT	PR EX
WI	WI Elec Power-Valley Plant	C	280		Menomonee Canal	Milwaukee Co.	OT	PR EX
WI	WI Elec Power-Commerce	O/G	35		Milwaukee R	Milwaukee Co.	OT	PR EX
WI	WI Elec Power-Point Beach	N	994	1970/1972	Lake Michigan	Manitowoc Co.	OT	PR EX
	2 Units							

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
WI	WI Elec Power-Port Wash	C	400		Lake Michigan	Ozaukee Co.	OT	EX RV
WI	WI Elec Power-Lakeside 7 Units	O/G	310	1935	Lake Michigan	Milwaukee Co.	OT	AP RV
WI	WI Elec Power-Oak Creek	C	1670		Lake Michigan	Milwaukee Co.	OT	AP RV
WI	(WI Elec Pwr Co-Koshkonong) 2 Units	N	1800	1983/1984	Rock R	Jefferson Co.	NT	EX PR
WI	(WI Elec Pwr Co-Pleasant (Prairie))	N	1234		Lake Michigan	Kenosha Co.	MT	EX PR
WI	WI Power & Light-Edgewater 4 Units	C	477	1931/1969	Lake Michigan	Sheboygan Co.	OT	RV
WI	(WI Pwr & Lgt-Edgewater #5)	C			Lake Michigan	Sheboygan Co.		EX PR
WI	WI Power & Light-Rock River 2 Units	C	150	1954	Rock R	Rock Co.	OT	RV
WI	WI Power & Light-Blackhawk 2 Units	C/G	50	1917/1949	Rock R	Rock Co.	OT	EX RV
WI	WI Power & Light-Nelson Dewey 2 Units	C	227	1959	Mississippi R	Grant Co.	OT	EX RV
WI	WI Power & Light-Columbia #1	C	527		Wisconsin R	Columbia Co.	CP	EX PF
WI	(WI Power & Light-Columbia #2)	C	527		Wisconsin R	Columbia Co.	MT	EX PR
WI	WI Publ Serv-Kewaunee #1	N	541	1973	Lake Michigan	Kewaunee Co.	OT	RV
WI	WI Publ Serv-Pulliam 8 Units	C/O	392	1927	Fox R	Brown Co.	OT	RV
WI	WI Publ Serv-Weston 2 Units	G	135	1954	Wisconsin R	Marathon Co.	OT	(15) RV
WI	(WI Publ Serv-Weston)	C	300		Wisconsin R	Marathon Co.	MT	EX PR
WI	Sup Water Light & Power-Winslow	O/G	28	1894/1942	Lake Superior	Douglas Co.	OT	EX RV

FOOTNOTES:

- (1) - Central Illinois Public Service Company has been issued an NPDES permit by Region V, US EPA for Coffeen Generating Facility. This permit would require 316(a) and 316(b) studies. Central Illinois has requested an adjudicatory hearing on the basis that the waters comprising the cooling lake are privately owned by Central Illinois Public Service Company and are not waters of the state.
- (2) - Postponed due to water quality conditions.
- 3 - Thermal studies have been submitted, but the plant is being decommissioned.
- 4 - Central Illinois Public Service reports that in February of 1975, a formal presentation was submitted to Region V, US EPA, to satisfy NPDES permit requirements concerning a 316(b) study. To date, a response has not been forthcoming.
- 5 - Plant is exempt from carrying out 316(b) monitoring pending review of the closed cycle intake structure.
- 6 - Facility must meet compliance with state water quality standards, but may not necessarily fall within the scope of a 316(a).
- 7 - Plant may be required to do a 316(a) study if it does not meet the delta T requirement for State of Ohio.
- 8 - Demonstration has been approved for 2 units scheduled to close down in 1980. Another operable unit has a 316(a) requirement which is in the preparatory stages at the company level. (PR).
- 9 - A 316(b) demonstration is not required because of the poor quality of the water in this portion of the Scioto River. When and if conditions are improved, 316(b) monitoring may be required.
- 10 - Intake monitoring report was submitted to the Wisconsin Dept. of Natural Resources on June 1, 1976.
- 11 - An informational hearing was held on June 1, 1976. Although federal thermal limitations exempt this plant, due to size and/or age of the plant, Wisconsin regulations impose thermal limitations which allow a thermal variance demonstration to be submitted. This demonstration is similar but not identical to a 316(b) demonstration.
- 12 - Approved subject to public notice.
- 13 - Approved pursuant to stipulation.
- 14 - Studies ongoing pursuant to stipulation.
- 15 - The plant is attempting to prove it meets thermal mixing zone requirements for the state in lieu of a 316(a) demonstration.
- (16) - Requirements unknown.
- (17) - Riverside has requested a land availability variance.

CODES:

- AP - Request approved.
CA - Conditional approval (subject to public hearing).
EX - Plant exempt.
PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RJ - Request rejected.
RV - Request under review by regulatory agency.

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
LA	Gulf States Util-Willow Glen 4 Units	G	1586	1960	Mississippi R	Itterville Co.	OT	RV PR
LA	Louisiana Pwr & Lgt-9-Mi Pt 5 Units	G	1134	1951	Mississippi R	Jefferson Co.	OT	PR PR
LA	Louisiana Pwr & Lgt-Waterford #3	N	1113	1980	Mississippi R	St. Charles Co.	OT	PR PR
TX	Houston Lt & Pwr-Cedar Bayou 2 Units	O/G	2250	1970	Upper Galveston B	Chambers Co.	OT ¹	PR PR
TX	Houston Lt & Pwr-PH Robinson 4 Units	O/G	2197	1966	Dickinson Bay	Galveston Co.	OT ²	PR PR

FOOTNOTES:

- 1 - With a supplemental once-through 2600-acre cooling pond.
- 2 - With supplemental cooling towers for summer use only.

CODES:

PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RV - Request under review by regulatory agency.

REGION VII

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
IA	Interstate Power	C	250	1980	Mississippi R	Allamakee Co.	OT	RV
IA	Iowa Pub Serv 3 Units	C	1016	1964/72/75	Missouri R	Woodbury Co.	OT	AP
IA	Iowa Pub Serv Unit 4	C	576	1979	Missouri R	Woodbury Co.	OT	RV
IA	Iowa Pwr & Lgt 2 Units	C	120	1954/1958	Missouri R	Pottawattamie Co.	OT	EX
IA	Iowa Pwr & Lgt Unit 3 (2)		650	1979			OT	AP
IA	Iowa Pwr & Lgt-Des Moines Sta	C/G	(1)	1969	Des Moines R	Polk Co.	OT/CT	EX
MO	Union Electric 2 Units	C	1200	1975/1976	Mississippi R	Rush Tower	OT	PR
MO	Union Electric	C/G	1665	1970	Missouri R	Labadie	CT	PR
MO	Associated Electric	C	1200	1976	Mississippi R	New Madrid Co.	OT	AP
MO	Associated Electric	C	600	1981	Thomas Hill Res	Randolph Co.	CL	PR
MO	Kansas City Power & Light	C	630	1979	Missouri R	Itan Village	OT	AP
NE	NE Pub Pwr Dist-Cooper	N	778	1974	Missouri R	Nemaha Co.	OT	AP
NE	NE Pub Pwr Dist-Gerald Gentleman	C	650	1979	Sutherland Res	Lincoln Co.	OT	RV
NE	Omaha Pub Pwr Dist-NE City Sta	C	575	1979	Missouri R	Otoe Co.	OT	RV
NE	Omaha Pub Pwr Dist-Ft Calhoun #2	N	1150	1983	Missouri R	Washington Co.	OT	RV
KS	Bd of Public Utilities	C	235	1979	Missouri R	Wyandotte Co.	OT	RV

FOOTNOTES:

(1) - Winter: 235 MWe
Summer: 270 MWe

(2) - A new 650-MWe unit is scheduled for operation in fall of 1979.

CODES:

AP - Request approved.

EX - Plant exempt.

PR - Preparatory at company level; in case of 316(b) may represent study program underway.

RV - Request under review by regulatory agency.

GION VIII

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
ND	Basin Electric Power- Leland Unit DDS 2	C	400		Missouri R	Mercer Co.	OT	PR
UT	UT P&L Co-Generating Sta		47		Provo R	Utah Co.	OT	PR
WY	Pacific Power & Light	C	420		North Platte R	Natrona Co.	OT/CT	PR

CODE:

PR - Preparatory at company level; in case of 316(b) may represent study program underway.

REGION IX

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS	
								316a	316b
CA	City of Glendale	O	84		Los Angeles R	Los Angeles Co.	MT		
CA	LADWP-Harbor Steam 5 Units	G/O	65	1943	Los Angeles Harbor	Los Angeles Co.	OT		EX
CA	LADWP-Haynes 6 Units	G/O	1057	1962	San Gabriel R	Los Angeles Co.	OT		EX
CA	LADWP-Scattergood 2 Units	G/O	490	1958	Pacific Ocean	Los Angeles Co.	OT		EX ³
CA	PG&E-Avon	O	34		Pacheco Creek	Contra Costa Co.	MT		EX
CA	PG&E-Contra Costa 7 Units	O/G	1260	1951	San Joaquin R	Contra Costa Co.	OT		EX ¹
CA	PG&E-Diablo Canyon 2 Units	N	2190	1976/1977	Pacific Ocean	San Luis Obispo Co.	OT		PR
CA	PG&E-Humboldt Bay 3 Units	N/O/G	168	1956	Humboldt Bay	Humboldt Co.	OT		EX ²
CA	PG&E-Hunter's Point 3 Units 2-4	G/O	377	1948	San Francisco Bay	San Francisco Co.	OT		EX ²
CA	PG&E-Martinez	O	43		Patton Slough	Contra Costa Co.	MT		EX
CA	PG&E-Morro Bay 4 Units	O/G	1002	1955	Pacific Ocean	San Luis Obispo	OT		EX
CA	PG&E-Moss Landing #1-5	O/G	558	1950	Moss Landing Har.	Monterey Co.	OT		EX ¹
CA	PG&E-Moss Landing #6&7	O/G	1478	1967	Moss Landing Har.	Monterey Co.	OT		EX
CA	PG&E-Oleum 2 Units	O/G	87	1942	San Pablo Bay	Contra Costa Co.	OT		EX ²
CA	PG&E-Pittsburg #1-6	O/G	2002	1954	Suisun Bay	Contra Costa Co.	OT		EX ¹
CA	PG&E-Pittsburg #7	O/G			Suisun Bay	Contra Costa Co.	SC		FX
CA	PG&E-Potrero 2 Units	G/O	323	1931	San Francisco Bay	San Francisco Co.	OT		EX ²
CA	PG&E-Potrero #3	G/O			San Francisco Bay	San Francisco Co.	OT		EX
CA	SCE-Alamitos 6 Units	G/O	213	1956	San Gabriel R	Los Angeles Co.	OT		EX
CA	SCE-E1 Segundo 4 Units	G/O	213	1955	Pacific Ocean	El Segundo Co.	OT		EX
CA	SCE-Highgrove	G/O	14		Santa Ana R	San Bernardino Co.	MT		EX
CA	SCE-Huntington Beach 4 Units	G/O	490	1958	Pacific Ocean	Orange Co.	OT		EX
CA	SCE-Long Beach	G	25		Long Beach Channel	Long Beach Co.	OT		EX
CA	SCE-Mandalay 2 Units	G/O	400	1959	Pacific Ocean	Ventura Co.	OT		EX
CA	SCE-Ormond 2 Units	G/O	1271	1971	Pacific Ocean	Ventura Co.	OT		AP
CA	SCE-Redondo 8 Units	G/O	132	1948	Pacific Ocean	Los Angeles Co.	OT		EX
CA	SCE-San Bernardino 2 Units	G/O	67	1957	Santa Ana R	San Bernardino Co.	MT		EX

ION IX

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
CA	SCE-San Onofre #2&3	N	430	1980/1982	Pacific Ocean	San Diego Co.	OT	AP ^{2,3}
CA	SDG&E-Encina #4&5	G/O	637		Pacific Ocean	San Diego Co.	OT	PR
CA	SDG&E-Silver Gate	G/O	247		San Diego Bay	San Diego Co.	OT	EX
CA	SDG&E-South Bay 4 Units	G/O	714	1961	San Diego Bay	San Diego Co.	OT	EX
CA	SDG&E-Station B	G/O	96		San Diego Bay	San Diego Co.	OT	EX
CA	SMUD-Rancho Seco	N	913	1974	Hadselville Creek	Sacramento Co.	MT	EX
GU	GPA-Cabras	O	264		Piti Channel	Agana	OT	PR
GU	GPA-Tanguisson	O	50		Piti Channel	Agana	OT	(2)
GU	Navy-Piti	O	25		APCA Harbor	Piti	OT	(2)
HI	HECO-Honolulu 4 Units	O	2	1920/1930	Honolulu Harbor	Honolulu Co.	OT	EX
HI	HECO-Kahe 5 Units	O	497	1963	Pacific Ocean	Honolulu Co.	OT	AP
HI	HECO-Waiiau 8 Units	O	26	1938	Pearl Harbor	Honolulu Co.	OT	EX
HI	Hilo Electric-Puueo	(4)	3		Waiulku R	Hilo	OT	EX
HI	Hilo Electric-Shipmann	O	24		Wailoa R	Hilo	OT	EX
HI	Kauai Electric-Port Allen	O	11		Pacific Ocean	Port Allen	OT	EX
HI	Maui Electric-Kahului 4 Units	O	6	1948	Pacific Ocean	Kahului-Maui	OT	EX
NV	Nevada Power Co-Clark 3 Units	O	190	1955	Duck Creek	Clark Co.	MT	EX
NV	Nevada Power Co-Sunrise 1 Unit	O	82	1964	Las Vegas Wash	Clark Co.	MT	EX
NV	Sierra Pacific Power-Tracy	O	53	1963	Truckee R	Storey Co	OT	EX

2 Units

NOTE: Although no formal studies currently are being conducted in direct response to 316(b) regulations, some utilities are monitoring impingment effects.

FOOTNOTES:

- 1 - Although certain units are exempt from thermal limitations of EPA's Effluent Guidelines and Standards for the Steam Electric Generating Point Source Category, they do not meet, at certain times of the year, numerical limitations under the State Thermal Plan. Accordingly, a Type I, 316(a) demonstration is being performed. This situation applies to: Pittsburgh Units 1-6; Contra Costa Units 1-7; Moss Landing Harbor Units 1-5.
- 2 - The California Regional Water Quality Control Board has not made a determination as to compliance of certain units with the State Thermal Plan. This situation applies to: Humboldt Bay Units 1-3; Hunter's Point Units 2-4; Oleum Units 1 & 2; Potrero Units 1 & 2; San Onofre Units 2 & 3; Cabras; and Tanquissan.
- 3 - Approved/Exempt on the basis of a land development exemption under Federal regulations.
- 4 - Diesel generator operated plant.

CODES:

- AP - Request approved.
- EX - Plant exempt.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- EV - Request under review by regulatory agency.

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
AK	Chugach Elect. Assn.		15		Ship Creek	Anchorage	OT/CP	
AK	Golden Valley Elec Assn, Healy		22	1967	Nenana R	Healy	OT	RV
	1 Unit							
AK	DOJ-Elmendorf AFB		32		Ship Creek	Anchorage	CP	
AK	Ft Richardson Fish Rearing Fac					Anchorage	OT/CP	
AK	Municipal Util Sys		15			Fairbanks	OT	
WA	Wash Pub Pwr Supply Sys	N	860			Benton Co.	OT	

RV - Request under review by regulatory agency.

SOURCE: Federal Power Commission, Steam-Electric Plant Air and Water
Quality Control Data (Washington, D.C.: Government Printing
Office, March 1975).

Federal Power Commission, Steam-Electric Plant Construction Cost
and Annual Production Expenses. Twenty-Sixth Annual Supplement - 1973.
Prepared by Federal Power Commission, Bureau of Power, Washington, DC, 1973.

INFORUM/316

FEBRUARY 1977

Special Editor: NANCY PEPPER GARRUS

316 INTRODUCTION

This index contains a listing of Section 316(a) and (b) applications submitted to state and regional EPA authorities under the Federal Water Pollution Control Act Amendments of 1972. This listing updates information in the August 1976 issue of INFORUM.

In a continuing effort to verify and update 316 information, the research staff would appreciate hearing from individual utilities listed as to the status of 316 applications within a company. The staff would also like to acquire documentation of demonstrations submitted to the regulatory agency. Documents should be sent to INFORUM Research Supervisor, Shu-Shun Chiang, Atomic Industrial Forum, 1747 Pennsylvania Ave., N.W., Suite 1150, Washington, DC 20006, telephone (202) 833-9234.

This index is organized according to the 10 regions of the U.S. Environmental Protection Agency. Within each region, data are arranged alphabetically by state/utility. For each plant, the information includes capacity, fuel type, operating date, receiving water body, location, type of cooling system, and status of 316(a) and (b) applications. In most instances the operating dates are indicated for initial year of plant operation. Wherever possible, however, operating dates are listed individually for each unit or noted inclusively for plants of 4 or more units.

FUEL TYPE

C	Coal
G	Gas
GT	Gas Turbine
N	Nuclear
O	Oil

COOLING SYSTEM

COM	Combination
CL	Cooling Lake
CP	Cooling Pond
CT	Cooling Tower
MT	Mechanical Draft Cooling Tower
NT	Natural Draft Cooling Tower
OT	Once-Through
SC	Spray Canal

STATUS OF 316(a) and (b)

AP	Request approved
CA	Conditional approval
CT	Court hearings
EX	Plant exempt
NA	Not applicable

VS Adj Hearing

- NR Monitoring not required as closed-cycle cooling is imposed in the final NPDES permit pursuant to the effluent guidelines or 316(b)
- PN Final NPDES permit has not been issued for this facility
- PR Preparatory at company level; in case of 316(b) may represent study program underway
- RJ Request rejected
- RV Request under review by regulatory agency
- To date no determination has been made

In order to obtain the information contained in this index, INFORUM has spoken with EPA officials in each region and contacted personnel of the individual utilities. The research staff is engaged in the continuing process of updating and verifying the data.

EPA REGIONS

REGION I: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

REGION II: New Jersey, New York and Puerto Rico.

REGION III: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.

REGION IV: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

REGION V: Illinois, Indiana, Michigan, Minnesota, Ohio and Wisconsin.

REGION VI: Arkansas, Louisiana, New Mexico, Oklahoma and Texas.

REGION VII: Iowa, Kansas, Missouri and Nebraska.

REGION VIII: Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

REGION IX: Arizona, California, Guam, Hawaii and Nevada.

REGION X: Alaska, Idaho, Oregon and Washington.

ACKNOWLEDGEMENT

We are indebted to the following EPA and state environmental officials for their assistance in providing us with the appropriate information.

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INFORM 316

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS	
								316a	316b
CT	CT Light & Power-Devon 8 Units	O	481	1924	Housatonic R	New Haven Co.	OT	EX	PR
CT	CT Light & Power-Montville	O	580	1937	Thames R	New London Co.	OT	EX	PR
	5 Units								
CT	CT Light & Power-Norwalk Harbor	O	338	1960	Long Island Sound	Fairfield Co.	OT	EX	PR
	2 Units								
CT	CT Yankee-Haddam Neck	N	575	1967	Connecticut R	Middlesex Co.	OT	FX	PR
CT	Hartford Elec-Middletown	O	833	1954	Connecticut R	Middlesex Co.	OT/MT	EX	PR
	4 Units								
CT	Hartford Elec-South Meadow	C	223	1921	Connecticut R	Hartford Co.	OT	FY	PP
	6 Units								
CT	Naval NUSC-New London	O			Thames R	New London Co.		EX	AP
CT	Naval Submarine Base	O	5		Thames R	New London Co.	OT	EX	PP
CT	Northeast Utilities-Millstone	N	2636	1970/75/79	Long Island Sound	New London Co.	OT	AF	PR
	3 Units								
CT	United Illuminating Co- New Haven Harbor Sta	O	447	1975	New Haven Harbor	New Haven Co.	OT	EX	PR
CT	United Illum-Bridgeport 3 Units	O	679	1957	Bridgeport Harbor	Fairfield Co.	OT	EX	PR
CT	United Illum-English 8 Units	O	163	1929	Mill R	New Haven Co.	OT	EX	PR
CT	United Illum-Steel Point 11 Units	O	174	1923	Bridgeport Harbor	Fairfield Co.	OT	EX	PR
MA	Bird & Son, Inc	O	5		Neponset R	Norfolk Co.	OT	EX	AP
MA	Boston Edison-Edgar Sta 3 Units	O	180	1949	Boston-Wey Fore R	Norfolk Co.	OT	FX	PR
MA	Boston Edison-L Street Sta 2 Units	O	200	1898	Boston Harbor	Suffolk Co.	OT	EX	PR

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MA	Boston Edison-Mystic Station	O	1218	1943	Boston-Mystic P	Middlesex Co.	OT	EX PR
MA	Boston Gas-Walden	O	10		Malden R	Middlesex Co.	OT	EX AP
MA	Boston Edison-Pilgrim #1	N	670	1972	Atlantic Ocean	Plymouth Co.	OT	RV RV
MA	Boston Edison-Pilgrim #2	N	1180	1982	Atlantic Ocean	Plymouth Co.	OT	RV RV
MA	Braintree Elec-Allen St	O	21		Boston-Wey Fore R	Norfolk Co.	OT	EX AP
MA	Braintree Elec-Potter Sta	O	125		Boston-Wey Fore R	Norfolk Co.	OT	EX AP
MA	Braintree Elect-Potter 2	O	25	1976	Weymouth Fore R	Norfolk Co.	MT	EX AP
MA	Cambridge Elec-Blackstone	O/G	22	1890	Charles R	Middlesex Co.	OT	EX PR
3 Units								
MA	Cambridge Elec-Kendall Square	O/G	70	1949	Rd. Canal-Charles R	Middlesex Co.	OT	EX PR
3 Units								
MA	Canal Electric-Canal Plant	O	1120	1968	Cape Cod Canal	Barnstable Co.	OT	AP AP
2 Units								
MA	Holyoke Gas & Electric Dept	O	30		Connecticut R	Hampden Co.	OT	EX PR
MA	Holyoke Water-Mt Tom Plant 1 Unit	O	200	1960	Connecticut R	Hampden Co.	OT	EX PR
MA	Holyoke Water-Riverside Sta	O	45		Connecticut R	Hampden Co.	OT	EX AP
MA	Hudson Light & Power-Hudson	O/G	20	1930	Assabet R	Middlesex Co.	MT	EX AP
MA	M.B.T.A.-Lincoln Power Sta	O	60		Boston Harbor	Suffolk Co.	OT	EX PR
MA	M.B.T.A.-South Boston Power	O	120		Boston Harbor	Suffolk Co.	OT	EX PR
MA	Montaup Electric-Somerseset & Units	O	344	1925	Taunton R	Bristol Co.	OT	EX PR
MA	Nantucket Gas & Electric	O	12		Nantucket Harbor	Nantucket Co.	OT	EX AP
MA	New Bedford Gas & Edison-Cannon	O	80	1916/1947	New Bedford Hbr	Bristol Co.	OT	EX PR
3 Units								
MA	New England Power-Uxbridge	Transformer			Mumford R	Worcester Co.	OT	EX AP

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS
MA	New England Elec Sys.-Brayton 4 Units	O	1610	1963	Mount Hope Bay	Bristol Co.	OT/WT2	316a 316b EX1 PR
MA	New England Elec. Sys.- Salem Harbor 4 Units	O	775	1952	Salem Harbor	Bristol Co	OT	EX1 PR
MA	Peabody 4 Units Municipal-Peabody	O	11	1949-1966	Proctor Brook	Essex Co.	OT	FX AP
MA	Taunton Light-Cleary Sta 2 Units	O	29	1966/1975	Taunton R	Bristol Co.	OT/MT	EX PR
MA	Taunton Light-W Water Sta 5 Units	O	49	1902/1933	Taunton R	Bristol Co.	OT	FX PR
MA	Sprague Elec Co	O	15		Hoosac	Berkshire Co.	OT	EX AP
MA	Wameest Power Co	O	15		River Meadowbrook	Middlesex Co.	OT	EX AP
MA	Western Mass Elec-W Springfield	O	210	1949	Connecticut R	Hampden Co.	OT	FX PR
3 Units								
MA	Yankee Atomic Elec. Co.	N	175	1960	Deerfield R	Franklin Co.	OT	FX AP
ME	Bangor Hydro Elec-Machias	O	2		Past Machias R	Washington Co.	OT	EX AP
ME	Bangor Hydro Elec-Graham 3 Units	O	69	1954	Penobscot R	Penobscot Co.	OT	EX AP
ME	Central ME Pwr-Cape Sta	O	23		Fore R	Cumberland Co.	OT	FX PR
ME	Central ME Pwr-Mason 5 Units	O	147	1957	Sheep Scott R	Lincoln Co.	OT	EX PP
ME	Central ME Pwr-Wyman 4	O	600	1978	Casco Bay	Cumberland Co.	OT	AP AP
ME	Maine Public Service-Caribou	O	32		Aroostook R	Aroostook Co.	OT	FX AP
ME	Maine Yankee Atomic Power	N	790	1972	Rack R	Lincoln Co.	OT	PR PR
ME	U.S. Naval Base-Portsmouth	O	5		Piscataqua R	York Co.	OT	EX PR
NH	P.S. Co of NH-Newington 1 Unit	O	400	1974	Piscataqua R	Rockingham Co.	OT	PR PR
NH	P.S. Co of NH-Daniel Sta	O	20		Piscataqua R	Portsmouth Co.	OT	EX PR
NH	P.S. Co of NH-Manchester	O	20		Merrimack R	Rockingham Co.	OT	EX PR
NH	P.S. Co of NH-Merrimack 2 Units	O	454	1960	Merrimack R	Merrimack Co.	OT/SC	FX PR
NH	P.S. Co of NH-Schiller 4 Units	O	180	1949	Piscataqua R	Rockingham Co.	OT	EX PR
NH	P.S. Co of NH-Seabrook 2 Units	N	2300	1981	Atlantic Ocean	Rockingham Co.	OT	CT CT
RI	Bird & Son, Inc	O	5		Ten Mile R	Providence Co.	OT	EX AP

REGION I

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
RI	Narragansett Electric-Manchester	O	132	1902/1941	Providence R	Providence Co.	OT	FX PR
3 Units								
RI	Narragansett Electric-So St Sta	O	187	1909/1918	Providence R	Providence Co.	OT	EX PR
3 Units								
RI	Newport Electric-Newport	O	14		Narragansett Bay	Newport Co.	OT	EX PR
PI	U.S. Naval Base	O	10		Narragansett Bay	Newport Co.	OT	EX PR
VT	Burlington Elec-Moran	C	30	1954	Lake Champlain	Chittenden Co.	OT	EX AP
VT	Central VT Pub Serv-Milton 1 Unit	O	4	1943	Lamoille R	Chittenden Co.	OT	EX AP
VT	Central VT Pub Serv-Putland	O	25	1952/52/62	Otter Creek	Putland Co.	OT	EX AP
3 Units								
VT	Citizens Utilities-Newport	O	14	1947/1956	Clyde R	Orleans Co.	OT	EX AP
2 Units								
VT	Green Mt Power-Essex Junction				Winoski R			EX AP
VT	Vermont Yankee Nuc Power	N	520	1972	Connecticut R	Windham Co.	OT/MT	PR PR

FOOTNOTES:

(0) It is anticipated that decisions concerning 316(b) studies will be made within the next 6 months at a number of power plants in Region I.

1 - 316(a) demonstration will be made only if state water quality standards impose thermal limits more stringent than EPA guidelines.

2 - Unit #4 is an independent unit utilizing a circulating pond with spray modules.

LEGEND:

- AP - Request approved.
- CT - Court hearings.
- EX - Plant exempt.
- PP - Preparatory at company level; in case of 316(b) may represent study program underway.
- RV - Request under review by regulatory agency.

REGION II

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
NJ	Atl. City Elec-R.L. End. 2 Units	C/O	299	1962	Great Egg Harbor B	Cape May Co.	OT/CT ¹	PR (2)
NJ	Atl. City Elec-Deepwater 4 Units	O	277	1928	Delaware R	Salem Co.	OT ¹	PR (2)
NJ	Jer. Cent. P&L-Oyster Creek	N	640	1969	Barneget Bay	Ocean Co.	OT ¹	PR
	1 Unit							
NJ	Jer. Cent. P&L-Sayreville 4 Units	O	344	1930	Raritan R	Middlesex Co.	OT ¹	PR (6)
NJ	Jer. Cent. P&L-E.P. Werner	O	116	1930	Raritan R	Middlesex Co.	OT	PR (5)
	4 Units							
NJ	Jer. Cent. P&L-Gilbert 3 Units	O	126	1930	Delaware R	Hunterdon Co.	OT ¹	PR (5)
NJ	PSE&G-Atlantic 2 Units	N	2300	1985/1987	Atlantic Ocean	Atlantic Ocean	OT	PR
NJ	PSE&G-Bergen 2 Units	O	650	1959/1960	Overpeck Creek	Bergen Co.	OT ¹	PR RV*
NJ	PSE&G-Burlington #7	O	193	1955	Delaware R	Burlington Co.	OT ¹	PR RV
NJ	PSE&G-Burlington Com Cycle			1974	Delaware R	Burlington Co.	OT	PR RV
NJ	PSE&G-Essex #9	O	203	1973	Passaic R	Essex Co.	OT ¹	PR RV*
NJ	PSE&G-Hudson 2 Units	C/O	1114	1964/1968	Hackensack P	Hudson Co.	OT ¹	PR RV*
NJ	PSE&G-Kearny 2 Units	O	296	1953/1953	Hackensack R	Hudson Co.	OT ¹	PR RV*
NJ	PSE&G-Linden 3 Units	O	613	1957/57/72	Arthur Kill	Union Co.	OT ¹	PR RV*
NJ	PSE&G-Mercer 2 Units	C/O	653	1960/1961	Delaware R	Mercer Co.	OT ¹	PR RV
NJ	PSE&G-Sewaren 5 Units	O	820	1948-1962	Arthur Kill	Middlesex Co.	OT ¹	PR RV*
NJ	PSE&G-Salem 2 Units	N	2205	1976/1979	Delaware R	Salem Co.	OT	PR RV
NY	Central Hudson-Danskammer 4 Units	O	532	1951	Hudson R	Orange Co.	OT ¹	PR
NY	Central Hudson-Roseton	O	1200		Hudson R	Orange Co.	OT	PR
NY	Con Ed-Arthur Kill 2 Units	O	826	1959	Arthur Kill	Fitchmond Co.	OT ¹	PR RV
NY	Con Ed-Astoria 5 Units	O	1466	1953	East River	Queens Co.	OT ¹	PR RV
NY	Con Ed-East River 3 Units	O	432	1951	East River	New York Co.	OT ¹	PR RV
NY	Con Ed-Indian Point #2	N	873	1973	Hudson R	Westchester Co.	OT	PR
NY	Lilco-E.P. Barrett 2 Units	O	375	1956/1963	Barnums Island C	Nassau Co.	OT ¹	PR
NY	Lilco-Far Rockaway 1 Unit	O	114	1953	Mott Basin	Queens Co.	OT ¹	PR

REGION II

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
NY	Lilco-Glenwood 4 Units	O	377	1938/52/54	Hempstead Harbor	Nassau Co.	OT ¹	PR
NY	Lilco-Northport #1-4	O	1161	1967/68/72	Long Island Sound	Suffolk Co.	OT	RV
NY	Lilco-Port Jefferson 4 Units	O	467	1948	Port Jefferson	Suffolk Co.	OT ¹	PR
NY	Lilco-Shoreham 1 Unit	N	819	1979	Long Island Sound	Suffolk Co.	OT	RV
NY	N.Y. State ESG-Goudey 4 Units	C	104	1943	Little Coconut Cr.	Broome Co.	OT ¹	PR
NY	N.Y. State ESG-Greenidge 4 Units	C	170	1938	Keuka Lake Outlet	Yates Co.	OT ¹	PR
NY	N.Y. State ESG-Rickling 2 Units	C	75	1948	Chemung R	Steuben Co.	OT ¹	PR
NY	N.Y. State ESG-Jennison 2 Units	C	60	1945	Susquehanna R	Schenango Co.	OT ¹	PR
NY	N.Y. State ESG-Milliken 2 Units	C	300	1955	Cayuga Lake	Tompkins Co.	OT ¹	RV
NY	Niagara Mohawk P-Albany S 4 Units	O	400	1952	Hudson R	Albany Co.	OT ¹	RV
NY	Niagara Mohawk P-9/M #182	N	1610	1969/1982	Lake Ontario	Oswego Co.	OT ³	RV
NY	Niagara Mohawk P-Oswego #1-4	O	376	1940	Lake Ontario	Oswego Co.	OT ¹	PV
NY	Niagara Mohawk-Oswego #586	O	1750	1975/1979	Lake Ontario	Oswego Co.	OT	PV
NY	Niagara Mohawk-C R Huntley	C	875	1942	Niagara F	Erie Co.	OT ¹	RV
6 Units								
NY	Niagara Mohawk-Dunkirk 4 Units	C	628	1950	Lake Erie	Chautauqua Co.	OT ¹	PR
NY	Orange & Rockl-Rowline Pt. #182	O	1242	1972/1974	Hudson R	Rockland Co.	OT	RV ⁷
NY	Orange & Rockl-Lovett 5 Units	O	795	1949	Hudson R	Rockland Co.	OT ¹	RV
NY	Pwr Auth-NY-Astoria #6	O	800	1976	East River	New York Co.	OT ¹	RV
NY	Pwr Auth-NY-Fitzpatrick 1 Unit	N	821	1975	Lake Ontario	Oswego Co.	OT	RV
NY	Pwr Auth-NY-Indian Pt. #3	N	976	1976	Hudson R	Westchester Co.	OT	PR
NY	Rochester G&E-Beebe	C/O	184	1914	Genesee R	Monroe Co.	OT ¹	PR
NY	Pocheater G&F-Ginna 1 Unit	N	490	1970	Lake Ontario	Wayne Co.	OT ¹	RV ⁷
NY	Pocheater G&E-Russell 4 Units	C	253	1949	Lake Ontario	Monroe Co.	OT ¹	PR
PR	PR WR Auth-Aguirre	O	920		Jobes Bay	San Juan	OT	RV
PR	PR WR Auth-Northcoast	N	583	1981	Atlantic Ocean	Arecibo	OT	PV

FOOTNOTES:

- 1 - Closed cycle cooling is not required pursuant to the EPA effluent guidelines.
- (2) - Atlantic City Electric is pursuing a demonstration to ensure compliance with New Jersey water quality criteria applicable to B.L. England and Deepwater.
- 3 - Unit #2 has closed-cycle cooling.
- * - PSE&G originally submitted a Type I, 316(a) demonstration. Company is presently in the process of supplementing it with a Type III demonstration.
- 5 - Company maintains that facility falls within scope of Grandfather Clause. To date, state authorities have not responded.
- (6) - The utility hopes to demonstrate that Sayreville meets water quality standards 70-80% of the time.
- 7 - Additional information will be submitted to supplement the original demonstration.

CODES:

- CT - Court hearings.
- PN - Final NPDES permit has not been issued for this facility.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- NR - Monitoring not required as closed-cycle cooling is imposed in the final NPDES permit pursuant to the effluent guidelines or 316(b).
- To date no determination has been made.
- RV - Request under review by regulatory agency.

REGION III

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
DC	Potomac Elec. Pwr-Benning	O	893	1906/1929	Anacostia R.	Wash.D.C.	OT	PR
DC	Potomac Elec. Pwr-Buzzards Point	O	558	1933	Anacostia R.	Wash. D.C.	OT	PR
DE	Delmarva P&L-Indian River #1-3	C	345	1957/59/70	Indian R	Sussex Co.	OT	RV
DE	Delmarva P&L-Edgemoor 5 Units	O	789	1951-1973	Delaware R	New Castle Co.	OT	(1) PP
MD	E G & E-Chas Crane 2 Units	O	386	1962	Salt Peter Cr	Baltimore Co.	OT	(6) PR
MD	B G & E-Wagner 4 Units	C	980	1956	Patapsco R	Anne Arundel Co.	OT	(6) PR
MD	P G & E-Riverside 5 Units	O	345	1942	Patapsco R	Baltimore Co.	OT	(6) PR
MD	B G & E-Calvert Cliffs 2 Units	N	1690	1975/1977	Chesapeake Bay	Calvert Co.	OT	PR
MD	Delmarva P&L-Vienna 4 Units	O	229	1947-1971	Nanticoke R	Dorchester Co.	OT/MT	(2)
MD	PEPCO-Chalk Pt 4 Units	C/O	1330	1964-1976	Patuxent R	Prince Geo. Co.	OT/CT	PR
MD	PEPCO-Dickerson 3 Units	C/GT	603	1956/60/62	Potomac R	Montgomery Co.	OT	PR
MD	PEPCO-Morgantown 2 Units	C/GT	1182	1970/1971	Potomac R	Charles Co.	OT	PR
MD	Potomac Edison-Paul R. Smith	C	160	1923	Potomac R	Washington Co.	OT	(6)
PA	Duquesne Light-Beaver Valley	N	1704	1976/1981	Ohio R	Beaver Co.	NT	EX
2 Units								
PA	Duquesne Light-Brunot	O	404	1972	Ohio R	Allegheny Co.	CT	EX
PA	Duquesne Light-Phillips	C	408	1942	Ohio R	Allegheny Co.	OT	PR
PA	Duquesne Light-Elrama	C	525	1952	Monongahela R	Allegheny Co.	OT	PR
PA	Duquesne Light-Cheswick 1 Unit	C	570	1970	Allegheny R	Allegheny Co.	OT	RV
PA	Duquesne Light-Shippingsport	N	100	1977	Ohio R	Beaver Co.	OT	PR
PA	Luzerne Elec-Hunlock Cr #1	C	46	1958	N Br Susquehanna R	Luzerne Co.	OT	EX
PA	Metro Edison-3 Mi Is. Nu/Sta #1	N	792	1974	Susquehanna R	Dauphin Co.	NT	EX
PA	Metro Edison-C Titus 3 Units	C	225	1951/51/53	Schuylkill R	Berks Co.	OT	EX
PA	Metro Edison-Portland 2 Units	C	427	1958/1962	Delaware R	Northampton Co.	OT	EX
PA	PA Pwr-New Castle 5 Units	C	426	1939	Beaver R	Lawrence Co.	OT	PR
PA	PA Pwr-Bruce Mansfield 3 Units	C	2475	1976/1979	Ohio R	Beaver Co.	NT	EX
PA	PA P/L Co-Keystone Sta 2 Units	C	1872	1967	Crooked Cr	Armstrong Co.	CT	EX

REGION III

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
PA	PA P/L Co- Brunner Island	C	2642	1961	Susquehanna R	York Co.	OT	PR PR
PA	PA P/L Co-Martins Cr 4 Units	C/O	318	1955-1977	Delaware R	N. Hampton Co.	OT/NT	EX PR
PA	PA P/L Co-Sunbury	C/GT	416	1949	Susquehanna R	Snyder Co.	OT	FX PR
PA	PA P/L Co-Susquehanna Sta #162	N	2100	1980/1982	Susquehanna R	Luzerne Co.	NT	EX -
PA	Penelec-Shawville 4 Units	C/O	640	1954/1960	W. Br. Susquehanna R	Clearfield Co.	COM	EX ⁹ EX ⁹
PA	Penelec-Seward Sta 4 Units	C	268	1921	Conemaugh R	Indiana Co.	OT	EX ⁹ EX ⁹
PA	Penelec-Warren Sta 2 Units	C	73	1948	Allegheny R	Warren Co.	OT	EX PR
PA	Penelec-Front St. Sta	C	119	1927/1956	Lake Erie	Erie Co.	OT	EX ³ PR
PA	Penelec-Homer City 2 Units	C	1320	1969	Two Lick Cr	Indiana Co.	CT	FX PR
PA	Penelec-Conemaugh	C	1872	1970	Conemaugh R	Indiana Co.	CT	EX EX ⁹
PA	Penelec-Williamsburg	C	30	1944	Juniata R	Blair Co.	COM	PV PR
PA	Phila Elec-Delaware	O/GT	516	1920	Delaware R	Philadelphia Co.	OT	PR PR
PA	Phila Elec-Peach Bottom 2 Units	N	2130	1973/1974	Susquehanna R	York Co.	OT	RV PR
PA	Phila Elec-Richmond 4 Units	O	1082	1925	Delaware R	Northampton Co.	OT	PR PR
PA	Phila Elec-Chester Sta 5 Units	O	273	1918	Delaware R	Delaware Co.	OT	PR PR
PA	Phila Elec-Schuylkill Sta 5 Units	O	344	1903/1915	Schuylkill R	Philadelphia Co.	OT	PR PR
PA	Phila Elec-Limerick #162	N	2130	1981/1982	Schuylkill R	Montgomery Co.	NT	FX -
PA	Phila Elec-Cromby 2 Units	C/O/GT	693	1954	Schuylkill R	Chester Co.	OT	PR PR
PA	Phila Elec-Barbours Sta 2 Units	O/GT	221	1923/1949	Schuylkill R	Montgomery Co.	OT	PR PF
PA	Phila Elec-Eddystone 2 Units	C	707	1960	Delaware R	Delaware Co.	OT	PR PR
PA	Phila Elec-Southwark 2 Units	O	420	1947	Delaware R	Philadelphia Co.	OT	PR PR
PA	W Penn Pwr-Mitchell 3 Units	C	448	1948	Monongahela R	Washington Co.	OT	PR PR
PA	W Penn Pwr-Springdale Sta 2 Units	C	215	1920/1945	Allegheny R	Allegheny Co.	OT	EX PR
PA	W Penn Pwr-Hatfield Sta 3 Units	C	1728	1969	Monongahela R	Greene Co.	NT	EX PR
PA	W Penn Pwr-Milesburg Sta 2 Units	C	46	1950	Spring Cr	Centre Co.	OT	EX PR
PA	W Penn Pwr-Armstrong Sta 2 Units	C	326	1958	Allegheny R	Armstrong Co.	OT	EX PR
VA	Appalachian Pwr Co-Glen Lyn 5 Units	C	401	1918/1920	New R	Niles Co.	OT	PR PR

REGION III

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
VA	Appalachian Pwr Co-Clinch R	C	569	1958	Clinch R	Russell Co.	WT	EX PR
	3 Units							
VA	VEPCO-Potomac River Gen Sta	C	481	1949	Potomac R	City of Alex.	OT	EX PR
VA	VEPCO-Potomac Pt 4 Units	O	587	1948	Potomac R	Prince Wm. Co.	OT/WT	(7) PV
VA	VEPCO-Portsmouth 4 Units	O	624	1953	Elizabeth R	Chesapeake Co.	OT	(7) PR
VA	VEPCO-Surry 2 Units	N	1576	1972/1973	James R	Surry Co.	OT	PR PR
VA	VEPCO-Yorktown 2 Units	O	1226	1957	York R	York Co.	OT	EX PR
VA	VEPCO-Richmond Brevo Bluff	C	250	1931/1950	James R	Fluvanna Co.	OT	(7) PR
	2 Units							
VA	VEPCO-Chesterfield 6 Units	O	1441	1944	James R	Chesterfield Co.	OT	(7) PR
WV	Appalachian Pwr-Philipsborn	C	1050	1950/1960	Ohio R	Mason Co.	OT	RV PR
WV	Appalachian Pwr-Kanawha River	C	500	1953	Kanawha R	Kanawha Co.	-	-
WV	Appalachian Pwr-John Amos 3 Units	C/O	2950	1971	Little Scary Cr	Kanawha Co.	CT	EX PR
WV	Appalachian Pwr-Cabin Cr 7 Units	C/G	274	1914/1919	Kanawha R	Kanawha Co.	OT	PR PR
WV	Monongahela Pwr-Albright 3 Units	C	403	1952	Cheat R	Preston Co.	OT/WT	EX ⁹ EX ⁹
WV	Monongahela Pwr-Willow Is 2 Units	C	215	1949	Ohio R	Pleasants Co.	OT	PR AP
WV	Monongahela Pwr-Harrison 2 Units	C	1950	1950/1972	W Fork R	Harrison Co.	NT	FX PR
WV	Monongahela Pwr-Fort Martin	C	1152	1967	Monongahela R	Monongalia Co.	CT	EX PR
	2 Units							
WV	Monongahela Pwr-Pleasants	C	1252	1978	Monongahela R	Pleasants Co.	CT	EX PR
WV	Monongahela Pwr-Rivesville	C	110	1919/1943	Monongahela R	Marion Co.	OT	PR PR
	2 Units							
WV	Ohio Pwr-Kammer 3 Units	C	675	1958/1950	Ohio P	Marshall Co.	OT	RV PR
WV	VA Elec & Pwr Co-Mt. Storm	C/GT	1914	1965	Stony R	Grant Co.	COM	PR PR

FOOTNOTES:

(0) The State of Maryland Water Resources Administration anticipates promulgating regulations this spring relative to thermal discharge. This action probably will result in several Maryland power plants requesting alternate effluent limitations pursuant to Section 316(a) of P. L. 92-500.

- (1) - Thermal mixing zone data approved; 316(a) demonstration not required.
- (2) - Requirements not known.
- 3 - Gizzard shad study required.
- * - Met-Ed has not made a request for a 316(b) demonstration. Impingement/entrainment studies may be necessary, however, to satisfy requirements of NPDES permit. Studies would be initiated after a closed cycle cooling system becomes operational (July 1979).
- (5) - Impingement studies have been performed at the Portland Station by the Delaware River Anadromous Fishery Project (Aug. 1975 - May 1976). Entrainment studies are tentatively scheduled to begin in 1977. Studies may not be performed, however, because it has not been determined if they are necessary. These two sets of studies address requirements of the NPDES permit itself and are not presently a part of a 316(b) requirement that has been requested by Met-Ed.
- (6) - These plants must satisfy water quality standards for the state of Maryland.
- (7) - State of Virginia is reviewing temperature profile data to determine if a thermal mixing zone study or a 316(a) demonstration is needed.
- 8 - Meets state water quality standards.
- 9 - Exempt for present acid stream.

CODE:

- AP - Request approved.
- EX - Plant exempt.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- RV - Request under review by regulatory agency.
- To date no determination has been made.

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
AL	AL Pwr Co-Barry 5 Units	C	1525	1954	Mobile R	Mobile Co.	OT	PR
AL	AL Pwr Co-Farley 2 Units	N	1658	1977/1979	Chattahoochee R	Houston Co.	MT	PR
AL	AL Pwr Co-Gorgas 6 Units	C	1282	1929	Black Warrior R	Walker Co.	OT	RV
AL	AL Pwr Co-Greene Co. 2 Units	C	500	1965	Black Warrior R	Green Co.	OT	AP
AL	AL Pwr Co-Barton 4 Units	N	4636	1985-1987	Coosa R	Chilton Co.	MT	NA
AL	AL Pwr Co-Gaston 5 Units	C	1880	1960	Coosa R	Shelby Co.	NT	PR ¹
AL	TVA-Bellefonte 2 Units	N	2426	1980/1981	Tennessee R	Jackson Co.	NT	NA
AL	TVA-Browns Ferry 3 Units	N	3201	1973/74/76	Tennessee R	Limestone Co.	MT	EX ²
AL	TVA-Colbert 5 Units	C	1396	1955	Tennessee R	Colbert Co.	OT	AP
AL	TVA-Kidows Creek 8 Units	C	1978	1952	Tennessee R	Jackson Co.	OT	AP
FL	City of Tallahassee-Purdom Sta	O/G	118	1951	St Marks R	Wakulla Co.	OT	EX
7 Units								
FL	FL Pwr Corp-Anclote 2 Units	O	1030	1974/1977	Gulf of Mexico	Pinellas Co.	OT	PR
FL	FL Pwr Corp-Bartow 3 Units	O/G	494	1958	Tampa Bay	Pinellas Co.	OT	
FL	FL Pwr Corp-Crystal R 2 Units	N/O	1789	1976	Gulf of Mexico	Citrus Co.	OT	RV
FL	FL Pwr Corp-Higgins 3 Units	O/G	138	1951	Tampa Bay	Pinellas Co.	OT	EX
FL	FL P&L Co-St Lucie Sta #1	N	810	1976	Atlantic Ocean	St. Lucie Co.	OT	AP
FL	FL P&L Co-St Lucie Sta #2	N	810	1980	Atlantic Ocean	St. Lucie Co.	OT	-
FL	FL P&L Co-Riviera Sta 4 Units	O/G	739	1946	Lake Worth	Palm Beach Co.	OT	EX
FL	FL P&L Co-Cape Canaveral 2 Units	O/G	804	1965	Indian R	Brevard Co.	OT	RV
FL	FL P&L Co-Cutler 3 Units	O/G	287	1948/1949	Biscayne Bay	Dade Co.	OT	AP
FL	FL P&L Co-Ft. Meyers 2 Units	O	558	1958	Caloosahatchee R	Lee Co.	OT	RV
FL	FL P&L Co-Lauderdale 2 Units	O/G	312	1926/1957	Dania Canal	Broward Co.	OT	EX
FL	FL P&L Co-Manatee	O	1700		None	Manatee Co.	CL	NA
FL	FL P&L Co-Martin	O	2550		None	Martin	CP	NA
FL	FL P&L Co-Palatka 2 units	O/G	110	1951	St. John's R	Putnam Co.	OT	EX
FL	FL P&L Co-Putnam 3 Units	O	500		St. John's R	Putnam Co.	MT	RV

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
FL	FL P&L Co-Port Everglades	O/G	1255	1960	Lake Mable	Broward Co.	OT	FX RV
FL	FL P&L Co-Sanford 3 Units	O	1028	1926/1959	St. John's R	Volusia Co.	OT/CL	FX/NA PR
FL	FL P&L Co-South Dade 2 Units	N	2600	1980s	Atlantic O	Dade Co.	MT	NA NA ³
FL	FL P&L Co-Turkey Point 4 Units	N/O	2324	1972/1973	Atlantic Ocean	Dade Co.	CP	NA NA
FL	FL P&L Co-DeSoto	N	1300		Atlantic Ocean	Desoto Co.	CL	NA -
FL	FL Gulf Pwr Co-Crist Sta 7 Units	C/O/G	1062	1945-1973	Escambia R	Escambia Co.	OT/MT	NA AP
FL	FL Gulf Pwr Co-Scholtz 2 Units	C	90	1953	Apalachicola R	Jackson Co.	OT	EX PR
FL	FL Gulf Pwr Co-Smith 2 Units	C	397	1965/1967	North Bay	Bay Co.	OT	EX PR
FL	FL Gulf Pwr Co-Ellis	C	1000		Choctawhatchee R	Carryville	NT	NA -
FL	FL Jackvl Elec Authority-Kennedy 3 Units & 6 GT	O	478	1955	St. John's R	Duval Co.	OT	EX PR
FL	FL Jackvl Elec Authority-Northside 3 Units & 6 GT	O	1370	1966	St. John's R	Duval Co.	OT	AP PR
FL	FL Jackvl Elec Authority-Southside 5 Units & 2 GT	O	357	1950	St. John's R	Duval Co.	OT	EX PR
FL	FL Orlando Util Comm-Indian R 2 Units	O/G	1000	1960	Indian R	Brevard Co.	OT	EX PR
FL	FL Tampa Elec Co-Big Bend Sta 3 Units	C	1336	1970	Tampa Bay	Hillsborough Co.	OT	PP PR
GA	GA Pwr Co-Arkwright 4 Units	G	131	1941	Mulgee R	Bibb Co.	OT	FX -
GA	GA Pwr Co-Atkinson 4 Units	C/G	256	1930	Chattahoochee R	Cobb Co.	OT	EX -
GA	GA Pwr Co-Bowen 4 Units	C	3160	1971-1975	Etowah R	Bartow Co.	NT	NA -
GA	GA Pwr Co-Hammond 4 Units	C	953	1954	Coosa R	Floyd Co.	OT	EX -
GA	GA Pwr Co-Harlee Branch 4 Units	C	1746	1965	Lake Sinclair	Putnam Co.	OT	EX -
GA	GA Pwr Co-McManus 2 Units	O	144	1952	Turtle R	Glynn Co.	OT	EX -
GA	GA Pwr Co-Mitchell 3 Units	C	218	1948	Plint R	Dougherty Co.	OT	FX -
GA	GA Pwr Co-Yates 7 Units	C/G	1250	1950-1974	Chattahoochee R	Coweta Co.	OT/MT	EX/NA -

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
GA	GA Pwr Co-Hatch 2 Units	N	1581	1974/1979	Altamaha R	Appling Co.	MT	NA -
GA	GA Pwr Co-Wansley	C	1900		Yellow Dirt Cr	Carroll Co.	MT	NA -
GA	GA Pwr Co-Scherer	C	3800	1981	Ocmulgee R	Monroe Co.	NT	NA -
GA	GA Pwr Co-Vortle 2 Units	N	2226	1983/1984	Savannah R	Burke Co.	NT	NA -
GA	Savannah EEP Co-Effingham	O	163		Savannah R	Chatham Co.	OT	-
GA	Savannah EEP Co-Riverside	G	102		Savannah R	Chatham Co.	OT	EX -
GA	Savannah EEP Co-Pt Wentworth	O/G	334		Savannah R	Chatham Co.	OT	EX -
KY	Big Riv Elec Corp-Coleman	C/G	521	1969	Ohio R	Hancock Co.	OT	EX PR
	3 Units							
KY	Pig Riv Elec Corp-Reid	C	830	1965	Green R	Henderson Co.	OT	EX PR
	3 Unit							
KY	Cinci Elec & Gas-East Bend	C	1200		Ohio R		MT	NA -
	2 units							
KY	East KY Power Coop, Inc.-Spurlock	C	300	1976	Ohio R	Mason Co.	MT	NA NA
KY	KY Util Co-Chent 4 units	C	2000		Ohio R	Ghent	MT	NA RV
KY	KY Util Co-Green River 4 Units	C	264	1950	Green R	Muhlenberg Co.	OT	RV RV
KY	Louisville G&E Co-Cane Run	C/G	1017	1954	Ohio R	Jefferson Co.	OT	FX PR
	6 Units							
KY	Louisville G&E Co-Mill Creek	C	1527	1972	Ohio R	Jefferson Co.	OT	EX PR
	1 Unit							
KY	Louisville G&E Co-Trimble County	C	2300	1981	Ohio R	Trimble Co.	NT	NA -
	4 units							
KY	Owensboro Mun-Smith 2 units	C	416	1964-1974	Ohio R	Davies Co.	OT	PR RV
KY	TVA-Paradise 3 units	C	2558		Green R	Muhlenberg Co.	NT	EX RV
KY	TVA-Shawnee 10 Units	C	1750	1953	Ohio R	McCracken Co.	OT	EX RV
MS	MS Pwr Co-Watson 5 Units	C/O/G	1051	1957-1970	Biloxi R	Harrison Co.	OT/MT/SC	PR PR
MS	MS P&L Co-Andrus	O	750			Washington Co.	OT	- -

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MS	MS P&L Co-Grand Gulf 2 Units	N	2500	1979/1981	Mississippi R	Claiborne Co.	NT	NA NA'
MS	TVA-Yellow Creek 2 Units	N	2600	1983/1984	Tennessee R	Tishomingo Co.	MT	NA -
NC	Carolina P&L Co-Asheville 2 Units	C	414	1964	French Broad R	Buncombe Co.	CL	- -
NC	Carolina P&L Co-Brunswick 2 Units	N	1642	1977/1974	Cape Fear Estuary	Brunswick Co.	OT	AP RV*
NC	Carolina P&L Co-Cape Fear 6 Units	C	421	1923	Cape Fear R	Chatham Co.	MT	FX PR
NC	Carolina P&L Co-Lee 3 Units	C/G	402	1951	Neuse R	Wayne Co.	CP	EX -
NC	Carolina P&L Co-Roxboro 4 Units	C	2558	1966-1980	Hico Creek	Person Co.	CL/CT	- -
NC	Carolina P&L Co-Sutton 3 Units	O/G	672	1954	Cape Fear R	New Hanover Co.	CP	EX -
NC	Carolina P&L Co-Harris 4 Units	N	3600	1984-1990	Buckhorn Cr	Wake Co.	NT	NA -
NC	Carolina P&L Co-Mayo 2 Units	C	1440	1982/84	Hico Creek	Person Co.	NT	NA -
NC	Duke Pwr Co-Marshall Sta 4 Units	C/O	2000	1965	Lake Norman	Catawba Co.	OT	AP AP
NC	Duke Pwr Co-Riverbend Sta	C/O/G	751	1929	Lake Mtn Isl	Gaston Co.	OT	AP AP
11 Units								
NC	Duke Pwr Co-Allen Sta 5 Units	C	1155	1957	Lake Wylie	Gaston Co.	OT	RV AP
NC	Duke Pwr Co-Buck Sta 9 Units	C/O	519	1926	Lake High Rock	Rowan Co.	OT	FX AP
NC	Duke Pwr Co-Cliffside Sta 5 Units	C	781	1940	Broad R	Rutherford Co.	OT/MT	EX/NA AP
NC	Duke Pwr Co-Dan River Sta 3 Units	C	284	1949	Dan R	Rockingham Co.	OT	EX AP
NC	Duke Pwr Co-Bellews Cr	C	2160		Bellews Cr	N. Winston	CL	- -
NC	Duke Pwr Co-McGuire 2 Units	N	2360	1978/1979	Lake Norman	Mecklenburg Co.	OT	- -
NC	Duke Pwr Co-Perkins 3 Units	N	3840	1983/85/87	Yadkin R	Davie Co.	MT	NA -
SC	Carolina P&L Co-HB Robinson Sta	N/C	975	1960	Lake Robinson	Darlington Co.	CL	RV AP
2 Units								
SC	Duke Pwr Co-Catawba 2 Units	N	2306	1979/1980	Lake Wylie	York Co.	MT	NA -
SC	Duke Pwr Co-Oconee 3 Units	N	2613	1973/73/74	Keowee Lake	Oconee Co.	OT	- AP
SC	Duke Pwr Co-Lee 3 Units	C/G	345	1951	Saluda R	Anderson Co.	OT	RV RV
SC	Duke Pwr Co-Cherokee 3 Units	N	3840	1984/86/88	Broad R	Cherokee Co.	MT	NA -
SC	SC Elec & Gas-Canadys 3 Units	C/G	490	1962	Pdisto R	Colleton Co.	OT/CP	PR PR

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
SC	SC Elec & Gas-Wagood 3 Units	O/G	98	1947	Ashley R	Charleston Co.	OT	EX PR
SC	SC Elec & Gas-McMeekin 2 Units	G	275	1958	Lake Murray	Lexington Co.	OT	PX PR
SC	SC Elec & Gas-Summer 1 Unit	N	900	1979	Monticello Res	Fairfield Co.	OT	AP -
SC	SC Elec & Gas-Wateree 2 Units	C	772	1970	Wateree R	Richland Co.	CT	PR PR
SC	SC Elec & Gas-Williams 1 Unit	O	1170	1973	Back R/Cooper R	Berkly Co.	MT	PR PP
SC	SC Elec & Gas-Urghart 3 Units	G	250	1953	Savannah R	Aiken Co.	OT	PR PR
SC	SC Pub Serv-Georgetown	C	630		Turkey Cr	Georgetown Co.	CP/CT	NA PR
SC	SC Pub Serv-Grainger 2 Units	C	163	1966	Waccanaw R	Horry Co.	OT	PR PR
SC	SC Pub Serv-Jeffries 4 Units	C/O	446	1953/1970	Cooper R	Berkeley Co.	OT	EX PR
TN	TVA-Allen 3 Units	C/G	990	1958	Mississippi R	Shelby Co.	OT	EX RV
TN	TVA-Bull Run 1 Unit	C	950	1967	Clinch P	Anderson Co.	OT	RV RV
TN	TVA-Gallatin 4 Units	C	1255	1956	Cumberland R	Sumner Co.	OT	RV RV
TN	TVA-Johnsonville 10 Units	C	1485	1951	Tennessee R	Humphreys Co.	OT	AP RV
TN	TVA-Kingston 9 Units	C	1700	1954	Clinch/Emory R	Roane Co.	OT	AP RV
TN	TVA-Watts Bar 4 units	C	240		Tennessee R	Rhea Co.	OT	EX RV
TN	TVA-Cumberland 2 Units	C	2600	1973	Cumberland R	Stewart Co.	OT	PP PR
TN	TVA-Sevier 4 Units	C	846	1955	Holston R	Hawkins Co.	OT	PR PR
TN	TVA-Hartsville, 4 Units	N	4932	1981-1982	Cumberland R	Trousdale Co.	NT	NA -
TN	TVA - Phipps Bend 2 Units	N	2466	1984	Holston R	Hawkins Co.	NT	NA -
TN	TVA-Sequoyah 2 Units	N	2296	1977/1978	Tennessee R	Hamilton Co.	NT	- -
TN	TVA-Watts Bar Nuclear 2 Units	N	2354	1978/1979	Chickamauga Res	Rhea Co.	NT	NA -

FOOTNOTES:

1 - The NPDES permit requires that proposed modifications to the intake and discharge structures be made by June 30, 1977. The permit also requires that 316(a) data be collected in the event thermal limitations cannot be met.

- 2 - Plant will have 316(a) determination applicable to next NPDES permit due to multiple mode of cooling operation.
- 3 - Groundwater intake.
- 4 - Offstream cooling required for 316(b); a judicatory procedure is underway.
- 5 - Cold Standby.

CODES:

- AP - Request approved.
- EX - Plant exempt.
- NA - Not applicable.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- RV - Request under review by regulatory agency.
- To date no determination has been made.

REGION V

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS	
								316a	316b
IL	Cen IL Lgt Co-Wallace 7 Units	C/G	360	1925	Illinois R	Tazewell Co.	OT	EX	PR
IL	Cen IL Lgt Co-Edwards 3 Units	C	725	1960/68/72	Illinois R	Peoria Co.	OT	EX	PR
IL	(Cen IL Lgt Co-Duck Creek)	C	800		Duck Creek	Fulton Co.	CL	EX	PR
IL	Cen IL Pub Serv-Grand Tower	C	189	1950	Mississippi R	Jackson Co.	OT	EX	PR*
	2 Units								
IL	Cen IL Pub Serv-Meredosia 4 Units	C/O	550	1948-1975	Illinois R	Morgan Co.	OT/MT	EX	PR*
IL	Cen IL Pub Serv-Coffeen 2 Units	C	840	1965	Coffeen Lake	Montgomery Co.	CL	(1)	(1)
IL	Cen IL Pub Serv-Hutsonville	C/O	214	1940	Wabash R	Crawford Co.	OT	EX	PR*
	4 Units								
IL	(Cen IL Pub Serv-Newton) 1 Unit	C	550	1977	Newton Lake	Jasper Co.	CL	PR	PR
IL	Com Edison-Will County 4 Units	C	1269	1955	Chicago Canal	Will Co.	UT	EX	PR ²
IL	Com Edison-Joliet 4 Units	C	1787	1917	Des Plaines R	Will Co.	OT	EX	PR ²
IL	Com Edison-Dresden #1	N	200	1959	Illinois R	Grundy Co.	OT	EX	PR
IL	Com Edison-Zion 2 Units	N	1786	1973/1973	Lake Michigan	Lake Co.	OT	CA	RV
IL	Com Edison-Waukegan 4 Units	C	933	1923	Lake Michigan	Lake Co.	OT	CA	RV
IL	Com Edison-Kincaid 2 Units	C	1319	1967	Lake Sangchris	Christian Co.	CL	CA	PR
IL	Com Edison-Fisk 2 Units	C/G	547	1903/1914	So. Br. Chicago R	Cook Co.	OT	EX	(2)
IL	Com Edison-Dixon	C/G	119		Rock R	Lee Co.	OT	EX	PR
IL	(Com Edison-Byron) 2 Units	N	2240	1980/1982	Rock R	LaSalle Co.	NT	EX	RV
IL	(Com Edison-Lasalle) 2 Units	N	2156	1979/1980	Illinois R	LaSalle Co.	CP	EX	RV
IL	(Com Edison-Collins)	C/O	2601		Illinois R	Grundy Co.	CP	EX	RV
IL	(Com Edison-Braidwood) 2 Units	N	2240	1981/1982	Kankakee R	Will Co.	CL	EX	PR
IL	(Com Edison-Carroll Co) 2 Units	N	2200		Mississippi R	Carroll Co.		EX	EX ^s
IL	Com Edison-Quad Cities #182	N	1600	1972/1972	Mississippi R	Rock Island Co.	OT/SC	RV	RV
IL	Elec Energy Inc-Joppa 6 Units	C	1100	1953	Ohio R	Massac Co.	OT	CA	RV
IL	IA IL GSE Co-Moline 5 Units	G/O	79	1887/1913	Mississippi R	Rock Island Co.	OT	EX	RV

REGION V

IL (IA IL C&E Co-Moline)	G/O	40	Mississippi R	Rock Island Co.	OT	-	RV
IL Illinois Power-Vermilion 2 Units	C/O	186	Reservoir	Vermilion Co.	COM	FX	PR
IL Illinois Power-Wood River 5 Units	C/O	650	Mississippi R	Madison Co.	OT	PR	PR
IL Illinois Power-Havana 5 Units	C/O	230	Illinois R	Mason Co.	OT	FV	PR
IL Illinois Power-Havana #6	C	450	Illinois R	Mason Co.	CT	EX	PR
IL Illinois Power-Baldwin 2 Units	C	1210	Kaskaskia R	Randolph Co.	CP	EX	PR
IL (Illinois Power-Baldwin)		600	Kaskaskia R	Randolph Co.	-	-	-
IL Illinois Power-Hennepin 2 Units	C/G	306	Illinois R	Putnam Co.	OT	PR	-
IL (Illinois Power-Clinton 2 Units)	N	1866	Salt Creek	DeWitt Co.	CL	AP	-
IL Mt Carmel Pub Util	C/O	21	Wabash P	Wabash Co.	OT	EX	PR
IL Peru Light Dept	C	15	Illinois R		OT	EX	PR
IL So IL Power Coop	C	114	Lake of Egypt	Williamson Co.	OT	PR	PR
IL (So IL Power Coop)	C	170	Lake of Egypt	Williamson Co.	OT	PR	PR
IL Springfield W L & P	C	350	Lake Springfield	Sangamon Co.	CL	PR	PR
IL (Springfield W L & P)	C	384	Lake Springfield	Sangamon Co.	CL	PR	-
IL Western IL Power Coop-Pearl	C	22	Illinois R	Pike Co.	OT	EX	PR
IL Union Electric Co-Venice	C/O/G	494	Mississippi R	Madison Co.	OT	EX	PR
IL Winnetka Mun Elec & Water	C/O	26	Lake Michigan		OT	EX	AP
IN Com Edison-State Line 4 Units	C/G	972	Lake Michigan	Lake Co.	OT	RV	RV
IN IN-KY-Elec-Clifty Creek 6 Units	C	1304	Ohio R	Jefferson Co.	OT	AP	PR
IN Indiana-Mich Elec-Sullivan	C	450	Wabash R	Sullivan Co.	OT	RV	PR
IN Indiana-Mich Elec-Tanners Creek	C	1100	Ohio P	Dearborn Co.	OT	AP	PR
4 Units							
IN Indiana-Mich Elec-Wishawaka	C	394	St. Joseph R	St. Joseph Co.	OT	AP	EX
IN IN Statewide Rur Elec Coop-	C	233	White R	Pike Co.	OT	AP ⁹	PR
Hoosier Eng							
IN (IN Statewide Rur Elec Coop-	C	900	Turtle Lake	Sullivan Co.	CL	RJ	RJ
Merom Facility)							
IN Indianapolis P&L-Perry K	C/G	59	White R	Marion Co.	COM	EX	EX ⁵
IN Indianapolis P&L-Petersburg	C	724	White R	Pike Co.	OT	AP ⁹	PR
4 Units							

REGION V

IN Indianapolis PEL-Martinsville	C	364	White R	Morgan Co.	OT	RV	RV
IN Indianapolis PEL-Indianapolis	C	935	White R	Marion Co.	COM	AP ⁹	AP ²
IN No Indiana Pub Serv-Bailly	C	615	Lake Michigan	Porter Co.	COM	PP	PR
2 Units							
IN (No Indiana Pub Serv-Bailly)	N	645	Lake Michigan	Porter Co.	NT	PR	PR
1 Unit							
IN No Indiana Pub Serv-Michigan Cty	C/G	736	Lake Michigan	La Porte Co.	COM	PR ¹⁰	PR
3 Units							
IN No Indiana Pub Serv-Mitchell	C/G	529	Lake Michigan	Lake Co.	OT	PR	PR
4 Units							
IN (No Indiana Pub Serv-Schaefer)	C	1077	Kankakee R	Lake Co.	CT	EX	PR
IN Pub Serv of IN-Cayuga 2 Units	C	1018	Wabash R	Vermillion Co.	OT	RJ	PR
IN Pub Serv of IN-Edwardsport	C	144	White R	Knox Co.	OT	AP ⁹	PR
3 Units							
IN Pub Serv of IN-Noblesville	C	100	White R	Hamilton Co.	OT	AP ⁹	PR
IN Pub Serv of IN-Wabash River	C	962	Wabash R	Vigo Co.	OT	RJ	PR
6 Units							
IN Pub Serv of IN-Gallagher 4 Units	C/O	600	Ohio R	Floyd Co.	OT	AP	PV
IN (Pub Serv of IN-Marble Hill)	N	2300	Ohio R	Jefferson Co.	MT	EX	PR
2 Units							
IN So Indiana GSE, Co-Culley Sta	C	415	Ohio R	Warrick Co.	OT	AP	PR
3 Units							
IN So Indiana GSE Co-Alcoa-Warrick	C	380	Ohio R	Warrick Co.	OT	AP	PR
1 Unit							
MI Bayside (Municipal)	C	35	Lake Michigan	Traverse Co.	OT	EX	PR
MI Consumers Pwr Co-Big Rock 1 Unit	N	75	Lake Michigan	Charlevoix Co.	OT	EX	AP
MI Consumers Pwr Co-Campbell 2 Units	C	639	Lake Michigan	Ottawa Co.	OT	EX	AP
MI (Consumers Pwr Co-Campbell)	C	800	Lake Michigan	Ottawa Co.	-	-	-
MI Consumers Pwr Co-Cobb 5 Units	C	510	Lake Muskegon	Muskegon Co.	OT	EX	RV

REGION V

MI Consumers Pwr Co-Karn & Weadock	C/O	1200	1940	Saginaw Bay	Bay Co.	OT	RV	RV
10 Units								
MI (Consumers Pwr Co-Karn)	O	1307		Saginaw Bay	Bay Co.	CT	EX	RV
MI (Consumers Pwr Co-Midland)	N	1266	1982/1981	Tittabawassee R	Midland Co.	CL	PR	PR
2 Units								
MI Consumers Pwr Co-Morrow 4 Units	O	180	1939	Kalamazoo R	Kalamazoo Co.	OT	RV	RV
MI Consumers Pwr Co-Palisades 1 Unit	N	700	1972	Lake Michigan	Van Buren Co.	MT	EX	AP
MI Consumers Pwr Co-Whiting 3 Units	C	325	1952	Lake Erie	Monroe Co.	OT	EX	RV
MI Detroit Ed-Conners Creek 7 Units	C/O/G	540	1915/1935	Detroit R	Wayne Co.	OT	EX	RV
MI Detroit Ed-Delray 6 Units	O/G	375	1929	Detroit R	Wayne Co.	OT	FX	RV
MI Detroit Ed-Fermi #1	C	158		Lake Erie	Monroe Co.	OT	EX	RV
MI (Detroit Ed-Fermi #2)	N	1093		Lake Erie	Monroe Co.	NT	EX	PR
MI Detroit Ed-Harbor Beach	C	121		Lake Huron	Huron Co.	OT	EX	RV
MI Detroit Ed-Marysville 3 Units	C/G	230	1922/1930	St Clair R	St. Clair Co.	OT	EX	RV
MI Detroit Ed-Monroe 3 Units	C/O	3200	1971	Raisin R	Monroe Co.	OT	AP	RV
MI Detroit Ed-Pennsalt	C/O	37		Detroit R	Wayne Co.	OT	EX	PR
MI Detroit Ed-River Rouge 3 Units	C/O/G	933	1956	Detroit R	Wayne Co.	OT	EX	RV
MI Detroit Ed-St Clair 7 Units	C/O/G	1905	1953	St Clair R	St Clair Co.	OT	EX	RV
MI Detroit Ed-Trenton 5 Units	C/O/G	1076	1924	Detroit R	Wayne Co.	OT	EX	RV
MI Detroit Ed Co-Wyandotte No	C/O/G	54		Detroit R	Wayne Co.	OT	EX	RV
MI Detroit Ed Co-Wyandotte So		18		Detroit R	Wayne Co.	OT	EX	PR
MI Det Pub Lighting Co-Mistersky	C	174	1926	Detroit R	Wayne Co.	OT	EX	PR
(Municipal) 6 Units								
MI (Det Pub Lighting Co-Mistersky		60		Detroit R	Wayne Co.	OT	EX	PR
(Municipal))								
MI Ford Motor Co 4 Units	C/G	345	1931-1939	River Rouge	Wayne Co.	OT	AP	EX
MI Gladstone (Municipal)	C	6		Lake Michigan	Delta Co.	OT	EX	PR
MI IN & Mich Elec-Cook #1	N	859	1974	Lake Michigan	Berrien Co.	OT	RV	RV
MI (IN & Mich Elec-Cook #2)	N	1060	1977	Lake Michigan	Berrien Co.	OT	RV	RV
MI James De Young (Munic)	C/G	77		Lake Macutawa	Ottawa Co.	OT	EX	PR

REGION V

MI	Lansing Bd of WEL-Eckert 6 Units	C	386	1923/1954	Grand R	Ingham Co.	CT	PR	PR
MI	Lansing Bd of WEL-Erikson 1 Unit	C	160	1973	Grand R	Ingham Co.	CT	EX	PR
MI	(Lansing Bd of WEL-Erikson)	C	160		Grand R	Ingham Co.	-	-	-
MI	Lansing Bd of WEL-Ottawa	C	81		Grand R	Ingham Co.	OT	PR	PR
MI	No Mich Elec Coop-Advance 3 Units	C	40	1953	Lake Charlevoix	Poyne Co.	OT	FX	RV
MI	Up Penla Gen Co-Escanaba	C	29		Lake Michigan	Delta Co.	OT	EX	PR
MI	Up Penla Gen Co-Presque Isle	C	349	1955	Dead R	Marquette Co.	OT	RV	RV
	4 Units								
MI	(Up Penla Gen Co-Presque Isle)	C	160		Lake Superior	Marquette Co.	OT	-	PV
MI	Up Penla Gen Co-Warden	C/G	18		Lake Superior	Baraga Co.	OT	PR	PR
MI	Shiras (Municipal)	C/G	36		Lake Superior	Marquette Co.	OT	EX	PR
MI	(Shiras (Municipal))		40		Lake Superior	Marquette Co.	OT	EX	
MI	Wolverine Elec Coop	O/G	23		Little Rabbit R	Allegan Co.	CT	EX	AP
MI	Wyandotte Mun Serv Comm	C/G	56		Detroit R	Wyandotte Co.	OT	EX	PR
MN	Minn Power & Light-Hibbard	O	130	1931	St Louis R	St Louis Co.	OT	EX	PR
	4 Units								
MN	Minn Power & Light-Syl-Laskin	C	130	1953	Lake Colby	St Louis Co.	OT	PR	PR
	2 Units								
MN	Minn Power & Light-Boswell	C	514	1958	Mississippi R	Itasca Co.	OT	PR	PR
	3 Units								
MN	(Minn Power & Light-Boswell)		500		Mississippi R	Itasca Co.	CT	EX	PR
MN	(Minn Power & Light-Finlake)	C	500		St. Louis R	St. Louis Co.	CT	EX	PR
MN	N St Pwr-MN Valley	C/G	46	1930	Minnesota R	Chippewa Co.	OT	PR	AP
MN	N St Pwr-Monticello 1 Unit	N	545	1971	Mississippi R	Wright Co.	OT/MT	RV	PR
MN	N St Pwr-A S King 1 Unit	C	560	1968	St Croix R	Washington Co.	OT/CT	AP	PR
MN	N St Pwr-Riverside 7 Units	C/O/G	208	1911/1916	Mississippi R	Hennepin Co.	OT	CA	PR
MN	N St Pwr-High Bridge 4 Units	C/O/G	391	1924	Mississippi R	Ramsey Co.	OT	EX	CA
MN	N St Pwr-Black Dog 4 Units	C/G	441	1952	Minnesota R	Dakota Co.	OT/CP	(11)	PR
MN	N St Pwr-Wilmarth 2 Units	G	25	1948	Minnesota R	Blue Earth Co.	OT	PR	PR
MN	N St Pwr-Red Wing	C	28	1949	Mississippi R	Goodhue Co.	OT	EX	AP

SECTION V

MN	N St Pwr-Prairie Is 2 Units	N	1060	1973/1974	Mississippi R	Goodhue Co.	OT/MT	(11)	PR
MM	N St Pwr-Cherburn Units 1 & 2	C	1360	1977/1978	Mississippi R	Martin Co.	CT	EX	CA
MM	N St Pwr-Sherburn Units 3 & 4	C	1360	1981/1983	Mississippi R	Martin Co.	CT	EX	PR
MM	Other Tail Power Co-Hoot Lake	C	127	1948	Other Tail R	Other Tail Co.	COM	EX	PR
3 Units									
MM	Other Tail Power Co-Big Stone	C	15		Big Stone Lake	Big Stone Co.	OT	EX	PR
OH	Celina Munic Util	C	12			Yerger Co.		EX	PR
OH	Cinci G&S-W C Peckford 1 Unit	C	461	1969	Ohio R	Clermont Co.	OT	AP	PR
OH	Cinci G&S-Miami Fort 4 Units	C	387	1925/1938	Ohio R	Hamilton Co.	OT	AP	PR
OH	Cinci G&S-W H Zimmer 2 Units	N	1980	1978/1984	Ohio R	Clermont Co.	NT	EX	EXs
OH	Cleve Elec Illum Co-Ashtabula	C	640	1930	Lake Erie	Ashtabula Co.	OT	EXs	PR
9 Units									
OH	(Cleve Elec Illum Co-Perry)	N	2410	1980/1982	Lake Erie	Lake Co.	CT	EX	EXs
2 Units									
OH	Cleve Elec Illum Co-Avon Lake	C	1275	1926	Lake Erie	Lorain Co.	OT	RV	PR
9 Units									
OH	Cleve Elec Illum Co-Eastlake	C	1257	1953	Lake Erie	Lake Co.	OT	RV	PR
5 Units									
OH	Cleve Elec Illum Co-Lake Shore	C	518	1911/1941	Lake Erie	Cuyahoga Co.	OT	EXs	PR
5 Units									
OH	Cleve Dept of Pub Util-Lake Rd	C	188		Lake Erie	Cuyahoga Co.	OT	EXs	PR
OH	Col & So OH Elec Co-Conesville	C	433	1957	Muskingam R	Coshocton Co.	OT	PR	PR
3 Units									
OH	(Col & So OH Elec Co-Conesville)	C	1612		Muskingam R	Coshocton Co.	CT	EX	PR
2 Units									
OH	Col & So OH Elec Co-Picway	C	153	1955	Scioto R	Pickaway Co.	OT	AP/PR7	EXs
OH	(Col & So OH Elec Co)-New Berry	C	750		Ohio R		CT	PX	EXs
2 Units									
OH	Dayton Pwr & Lgt Co.-J M Stuart	C	1831	1970	Ohio R	Brown Co.	COM	RV	PR
3 Units									

REGION V

OH Dayton Pwr & Lgt-O H Hutchings	C	414	1946	Great Miami R	Montgomery Co.	OT	PR
6 Units							
OH (Dayton Pwr & Lgt-Killen) 2 Units	C	1200		Ohio R	Adams Co.	CT	EX ^s
OH Dayton Pwr & Lgt-Frank M Tait	C	448	1917/1937	Great Miami R	Montgomery Co.	OT	PR
7 Units							
OH Dayton Pwr & Lgt-Troy	C	24		Great Miami R	Miami Co.	EX	PR
OH Dover Elec Dept.	C	36		Tuscarawas R	Tuscarawas Co.	EX	PR
OH East Palestine Steam Plant	C	16			Columbia Co.	EX	PR
OH Hamilton Dept Public Util	C	80		Great Miami R	Butler Co.	OT	PR
OH IRC Fibers		21		Lake Erie	Lake Co.	OT	PR
OH Napoleon Municipal	C	17			Henry Co.	PR	PR
OH OH Edison-Norwalk	C/O	31	1935	Norwalk Cr	Huron Co.	PR	PR
OH OH Edison-R E Burger 5 Units	C	544	1944	Ohio R	Bellmont Co.	OT	PR
OH OH Edison-Edgewater 3 Units	C	193	1919/1923	Lake Erie	Lorain Co.	OT	EX ^s
OH OH Edison-W Lorain						CT	EX ^s
OH OH Edison-Gorge Steam 2 Units	C	88	1913/1943	Cuyahoga R	Summit Co.	OT	PR
OH OH Edison-Mad River 3 Units	C	75	1927	Mad R	Clark Co.	CT	PR
OH OH Edison-Niles 2 Units	C	250	1954	Mahoning R	Trumbull Co.	OT	EX ¹²
OH OH Edison-W H Sammis 7 Units	C	2304	1959	Ohio R	Jefferson Co.	OT	PR
OH OH Edison-Toronto 3 Units	C	176	1925/1940	Ohio R	Jefferson Co.	OT	PR
OH OH Edison-General Gavin	C	1300		Ohio R	Gallia Co.	CT	EX
OH (OH Edison-General Gavin)	C	1300		Ohio R	Gallia Co.	CT	EX ^s
OH OH Power Co-Cardinal 2 Units	C	1180	1967	Ohio R	Jefferson Co.	OT	PR
OH (OH Power Co-Cardinal)	C	615		Ohio R	Jefferson Co.	CT	EX ^s
OH OH Power Co-Muskingum 5 Units	C	1467	1953	Muskingum R	Morgan Co.	OT/CT	PR
OH OH Power Co-Woodcock	C	42		National Quarry	Allen Co.	OT	PR
OH OH Val Elec Corp-Kyger Creek	C	1086	1955	Ohio R	Gallia Co.	OT	PR
5 Units							
OH Painesville Elec Pwr	C	38			Lake Co.	PR	PR
OH St Marys Mun L&P	C/O	22		St. Marys R	Auglaize Co.	PR	PR

REGION V		C/O/G 28							
OH	Shelby Mun Lgt Dept								
OH	Toledo Edison-Bay Shore 4 Units	C	639	1955	Lake Erie	Richland Co.		PR	PR
OH	Toledo Edison-Acme 7 Units	C	307	1917/1929	Maumee P	Lucas Co.		EX	PR
OH	Toledo Edison-Davis-Besse #1	N	906	1976	Lake Erie	Ottawa Co.		PR	PR
OH	(Toledo Edison-Davis-Besse)	N	1812	1983/1985	Lake Erie	Ottawa Co.		EX	PR
2 Units									
OH	Toledo Edison-Water Street	C/O/G 10			Maumee R	Defiance Co.		PR	PR
OH	Union Carbide Corp-Marietta Sta		160		Ohio R	Washington Co.		PR	PR
OH	Willard El Sys		5			Puron Co.		EX	PR
WI	Dairyland Power Coop-Alma	C	187	1947	Mississippi R	Buffalo Co.		EX	RV
Units 1-5									
WI	(Dairyland Power Coop-Alma #6	C	350		Mississippi R	Buffalo Co.		AP	RV
WI	Dairyland Pwr Coop-E J Stoneman	C	52	1950	Mississippi R	Grant Co.		EX	RV
WI	Dairyland Pwr Coop-Genoa	N/C	419		Mississippi R	Vernon Co.		EX	RV
WI	Lk Supr Dist Pwr-Bay Front Sta	C/G	82	1917	Lake Superior	Ashland Co.		EX	RV
WI	Mad G&E Co-Blount Sta 7 Units	C/G	195	1902/1923	Lake Monona	Dane Co.		EX	RV
WI	Manitowoc Pub Util Pwr Plant	C	69	1964	Lake Michigan	Manitowoc Co.		EX	RV
5 Units									
WI	Menasha Elec & Water Util 4 Units	C	32	1949-1964	Vox R	Winnebago Co.		EX	RV
WI	N States Pwr-French Is 2 Units	G	25	1940	Mississippi R	IaCrosse Co.		EX	AP
WI	(N States Pwr Co-Tyrone)	N	1150		Chippewa R	Dunn Co.		EX	PR
WI	WI Elec Power-Valley Plant	C	280		Menominee Canal	Milwaukee Co.		EX	RV
WI	WI Elec Power-Commerce	O/G	35		Milwaukee R	Milwaukee Co.		EX	RV
WI	WI Elec Power-Point Beach	N	994	1970/1972	Lake Michigan	Manitowoc Co.		AP	RV
2 Units									
WI	WI Elec Power-Port Wash	C	400	1935	Lake Michigan	Ozaukee Co.		EX	RV
WI	WI Elec Power-Lakeside 7 Units	O/G	310	1935	Lake Michigan	Milwaukee Co.		AP	RV
WI	WI Elec Power-Oak Creek	C	1670		Lake Michigan	Milwaukee Co.		AP	RV
WI	(WI Elec Pwr Co-Koshkonong)	N	1800	1983/1984	Pock R	Jefferson Co.		EX	PR
2 Units									

WI	(WI) Elec Pwr Co-Planting Pairie)	C	1160	1980/1982	Lake Michigan	Keweenaw Co.	MT	FY	PR
WI	WI Power & Light-Edgewater #1-4.	C	477	1931/1969	Lake Michigan	Shenoyman Co.	OT	FV	RV
WI	(WI Pwr & Lgt-Edgewater #5)	C			Lake Michigan	Shenoyman Co.		FY	PR
WI	WI Power & Light-Rock River 2 Units	C	150	1954	Rock R	Rock Co.	OT	RV	RV
WI	WI Power & Light-Blackhawk 2 Units	C/G	50	1917/1949	Rock R	Rock Co.	OT	FY	RV
WI	WI Power & Light-Nelson Dewey 2 Units	C	227	1959	Mississippi R	Grant Co.	OT	FY	RV
WI	WI Power & Light-Columbia #1 2 Units	C	527		Wisconsin R	Columbia Co.	CP	EX	PR
WI	(WI Power & Light-Columbia #2)	C	527		Wisconsin R	Columbia Co.	MT	EX	PF
WI	WI Publ Serv-Kewaunee #1	N	541	1973	Lake Michigan	Kewaunee Co.	OT	AP	RV
WI	WI Publ Serv-Pulliam 8 Units	C/O	392	1927	Fox R	Brown Co.	OT	RV	RV
WI	WI Publ Serv-Weston Units 1 & 2	C	135	1954	Wisconsin R	Marathon Co.	OT	RV	RV
WI	(WI Publ Serv-Weston Unit 3)	C	300	1981	Wisconsin R	Marathon Co.	MT	EX	PR
WI	Sup Water Light & Power-Winslow	C/G	28	1894/1942	Lake Superior	Douglas Co.	OT	EX	RV

FOOTNOTES:

(0) State of Illinois: All facilities with a discharge of 0.5 billion BTU/HR have to prepare an environmental assessment of impacts of thermal discharge on the receiving water and submit the data to the Illinois Pollution Control Board in 1978.

(1) - Central Illinois Public Service Company has been issued an NPDES permit by Region V, US EPA for Coffeen Generating Facility. This permit would require 316(a) and 316(b) studies. Central Illinois has requested an adjudicatory hearing on the basis that the waters comprising the cooling lake are privately owned by Central Illinois Public Service Company and are not waters of the state.

(2) - Postponed due to water quality conditions.

3 - Thermal studies have been submitted, but the plant is being decommissioned.

4 - Central Illinois Public Service reports that in February of 1975, a formal presentation was submitted to Region V, US EPA, to satisfy NPDES permit requirements concerning a 316(b) study. To date, a response has not been forthcoming.

- 5 - Plant is exempt from carrying out 316(b) monitoring during review of the closed cycle intake structure.
- 6 - Facility must meet compliance with state water quality standards.
- 7 - Demonstration has been approved for 2 units scheduled to close down in 1980. Another operable unit has a 316(a) requirement which is in the preparatory stages at the company level. (PR).
- 8 - A 316(b) demonstration is not required because of the poor quality of the water in this portion of the Scioto River. When and if conditions are improved, 316(b) monitoring may be required.
- 9 - Approved pursuant to stipulation.
- 10 - Studies ongoing pursuant to stipulation.
- (11) - Requirements unknown.
- 12 Exempt due to special water quality conditions in the Mohoning River.

CODES:

- AP - Request approved.
- CA - Conditional approval.
- EX - Plant exempt.
- PR - Preparatory at company level; in case of 316(b) may represent study program underway.
- RJ - Request rejected.
- RV - Request under review by regulatory agency.
- To date no determination has been made.

REGION VI

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
LA	Gulf States Util-Willow Glen 4 Units	G	1586	1960	Mississippi R	Iberville Co.	OT	RV PR
LA	Louisiana Pwr & Lgt-9-Mi Pt 5 Units	G	1134	1951	Mississippi R	Jefferson Co.	OT	PR PR
LA	Louisiana Pwr & Lgt-Waterford #3	N	1113	1980	Mississippi R	St. Charles Co.	OT	PR PR
TX	Houston Lt & Pwr-Cedar Bayou 2 Units	O/G	2250	1970	Upper Galveston B	Chambers Co.	OT ¹	PR PR
TX	Houston Lt & Pwr-PH Robinson 4 Units	O/G	2197	1966	Dickinson Bay	Galveston Co.	OT ²	PR PR

FOOTNOTES:

- 1 - With a supplemental once-through 2600-acre cooling pond.
- 2 - With supplemental cooling towers for summer use only.

CODES:

PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RV - Request under review by regulatory agency.

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	316a	STATUS 316b
IA	Interstate Power	C	250	1980	Mississippi R	Allamakee Co.	OT	AP	PR
IA	Iowa Pub Serv-George Neal 3 Units	C	1016	1964/72/75	Missouri R	Woodbury Co.	OT	AP	PR
IA	Iowa Pub Serv-George Neal Unit 4	C	576	1979	Missouri R	Woodbury Co.	OT	PV	RV
IA	Iowa Pwr & Lgt-Coun. Bluffs 1&2	C	120	1954/1958	Missouri R	Pottawattamie Co.	OT	FX	PF
IA	Iowa Pwr & Lgt-Coun. Bluffs 3	C	650	1979	Missouri R	Pottawattamie Co.	OT	AP	PR
IA	Iowa Pwr & Lgt-Des Moines Sta	C/G	(1)	1969	Des Moines P	Polk Co.	OT/CT	EX	AP
IA	Iowa Illinois G & E	C	237		Mississippi R	Bettendorf	OT	EX	AP
MO	Union Electric 2 Units	C	1200	1975/1976	Mississippi R	Push Tower	OT	PR	PR
MO	Union Electric-Labadie	C/G	2400	1970	Missouri R	Labadie	OT	PV	PP
MO	Associated Electric	C	1200	1976	Mississippi R	New Madrid Co.	OT	AP	PR
MO	Associated Electric	C	600	1981	Thomas Hill Res	Pandolph Co.	OT	PR	PR
MO	Kansas City Power & Light-Iatan	C	630	1979	Missouri R	Iatan Village	OT	AP	PR
NE	NE Pub Pwr Dist-Cooper	N	778	1974	Missouri R	Nebraska Co.	OT	AP	RV
NE	NE Pub Pwr Dist-Gerald Gentleman	C	650	1979	Sutherland Res	Lincoln Co.	OT	AP	RV
NE	Omaha Pub Pwr Dist-NE City Sta	C	575	1979	Missouri R	Otoe Co.	OT	PV	PV
NE	Omaha Pub Pwr Dist-Ft Calhoun #2	N	1150	1983	Missouri R	Washington Co.	OT	PV	RV
KS	Ed of Public Util-Nearman Creek	C	235	1979	Missouri R	Wyandotte Co.	OT	AP	AP

FOOTNOTES:

(1) - Winter: 235 Mwe
Summer: 270 Mwe

CODES:

AP - Request approved.

EX - Plant exempt.

PR - Preparatory at company level; in case of 316(b) may represent study program underway.

RV - Request under review by regulatory agency.

REGION VIII

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
MD	Basin Electric Power- Leland Unit DDS 2	C	400		Missouri R	Mercer Co.	OT	PR -
UT	UT PEL Co-Hale	C	59	1936	Provo R	Utah Co.	OT	RV -
WY	Pacific Power & Light	C	420		North Platte R	Natrona Co.	OT/CT	RV -

CODE:

PR - Preparatory at company level; in case of 316(b) may represent study program underway.

RV - Request under review by regulatory agency.

- To date no determination has been made.

REGION IX

CA	Glendale Pub Serv Dept-Glendale	O	187	1941	Los Angeles R	Los Angeles Co.	MT	-	-
CA	LADWP-Harbor Steam 5 Units	G/O	65	1943	Los Angeles Harbor	Los Angeles Co.	OT	EX	PR
CA	LADWP-Waynes 6 Units	G/O	1057	1962	San Gabriel R	Los Angeles Co.	OT	EX	PR
CA	LADWP-Scattergood 2 Units	G/O	490	1958	Pacific Ocean	Los Angeles Co.	OT	EX ³	PR
CA	PG&E-Avon	O	34	1940	Suisun Bay	Contra Costa Co.	MT	EX	-
CA	PG&E-Contra Costa 7 Units	O/G	1260	1951	San Joaquin R	Contra Costa Co.	OT	EX ¹	PR
CA	PG&E-Diablo Canyon 2 Units	N	2190	1976/1977	Pacific Ocean	San Luis Obispo Co.	OT	PR	PR
CA	PG&E-Humboldt Bay 3 Units	N/O/G	168	1956	Humboldt Bay	Humboldt Co.	OT	FX ²	PR
CA	PG&E-Hunter's Point 3 Units 2-4	G/O	377	1948	San Francisco Bay	San Francisco Co.	OT	EX ²	PR
CA	PG&E-Martinez	O	43	1941	Suisun Bay	Contra Costa Co.	MT	FX	-
CA	PG&E-Morro Bay 4 Units	O/G	1002	1955	Pacific Ocean	San Luis Obispo	OT	EX	PR
CA	PG&E-Moss Landing #1-5	O/G	55P	1950	Moss Landing Har.	Monterey Co.	OT	EX ¹	PR
CA	PG&E-Moss Landing #6&7	O/G	1478	1967	Moss Landing Har.	Monterey Co.	OT	EX	PR
CA	PG&E-Oleum 2 Units	O/G	87	1942	San Pablo Bay	Contra Costa Co.	OT	FX ²	PR
CA	PG&E-Pittsburg #1-6	O/G	2002	1954	Suisun Bay	Contra Costa Co.	OT	EX ¹	PR
CA	PG&E-Pittsburg #7	O/G			Suisun Bay	Contra Costa Co.	SC	EX	-
CA	PG&E-Potrero 2 Units	G/O	323	1931	San Francisco Bay	San Francisco Co.	OT	EX ²	PR
CA	PG&E-Potrero #3	G/O			San Francisco Bay	San Francisco Co.	OT	EX	PR
CA	SCE-Alamitos 6 Units	G/O	213	1956	San Gabriel R	Los Angeles Co.	OT	EX	PR
CA	SCE-E1 Segundo 4 Units	G/O	213	1955	Pacific Ocean	El Segundo Co.	OT	EX	PR
CA	SCE-Highgrove	G/O	169	1952/1955	Santa Ana R	San Bernardino Co.	MT	EX	-
CA	SCE-Huntington Beach 4 Units	G/O	490	1958	Pacific Ocean	Orange Co.	OT	EX	PR
CA	SCE-Long Beach	G	25		Long Beach Channel	Long Beach Co.	OT	EX	PR
CA	SCE-Mandalay 2 Units	G/O	400	1959	Pacific Ocean	Ventura Co.	OT	EX	PR
CA	SCE-Ormond 2 Units	G/O	1271	1971	Pacific Ocean	Ventura Co.	OT	AP	PR
CA	SCE-Redondo 8 Units	G/O	132	1946	Pacific Ocean	Los Angeles Co.	OT	EX	PR
CA	SCE-San Bernardino 2 Units	G/O	130	1957	Santa Ana R	San Bernardino Co.	MT	EX	-
CA	SCE-San Onofre #2&3	N	430	1980/1982	Pacific Ocean	San Diego Co.	OT	AP ^{2,3}	PR

REGION IX

CA	SDG&P-Encina #485	G/O	637	1954/1972	Pacific Ocean	San Diego Co.	OT	PR	PR
CA	SDG&P-Silver Gate	G/O	247	1943/1952	San Diego Bay	San Diego Co.	OT	EX	PR
CA	SDG&P-South Bay 4 Units	G/O	714	1961	San Diego Bay	San Diego Co.	OT	EX	PR
CA	SDG&P-Station B	G/O	96	1922/1937	San Diego Bay	San Diego Co.	OT	EX	PR
CA	SMUD-Fancho Seco	N	913	1974	Hadselville Creek	Sacramento Co.	MT	EX	-
GU	GPA-Cabras	O	264		Piti Channel	Agana	OT	PR	PR
GU	GPA-Tanguisson	O	50		Piti Channel	Agana	OT	(2)	PR
GU	Navy-Piti	O	25		APCA Harbor	Piti	OT	(2)	PR
HI	HECO-Honolulu 4 Units	O	168	1930/1957	Honolulu Harbor	Honolulu Co.	OT	EX	PR
HI	HECO-Kahe 5 Units	O	497	1963	Pacific Ocean	Honolulu Co.	OT	AP	PR
HI	HECO-Waiau 8 Units	O	387	1938	Pearl Harbor	Honolulu Co.	OT	FX	PR
HI	Hilo Electric-Puho	(4)	3		Waiuku R	Hilo	OT	FX	PR
HI	Hilo Electric-Shipmann	O	24		Wailoa R	Hilo	OT	EX	RV
HI	Kauai Electric-Port Allen	O	11		Pacific Ocean	Port Allen	OT	EX	PR
HI	Maui Electric-Kahului 4 Units	O	40	1948	Pacific Ocean	Kahului-Maui	OT	EX	PR
NV	Nevada Power Co-Clark 3 Units	O	190	1955	Duck Creek	Clark Co.	MT	EX	-
NV	Nevada Power Co-Sunrise 1 Unit	O	82	1964	Las Vegas Wash	Clark Co.	MT	EX	-
NV	Sierra Pacific Power-Tracy	O	53	1963	Truckee R	Storey Co	OT	(1)	PR

2 Units

REGION IX

FOOTNOTES:

- 1 - Although certain units are exempt from thermal limitations of EPA's Effluent Guidelines and Standards for the Steam Electric Generating Point Source Category, they do not meet, at certain times of the year, numerical limitations under the State Thermal Plan. Accordingly, a Type I, 316(a) demonstration is being performed. This situation applies to: Pittsburg Units 1-6; Contra Costa Units 1-7; Moss Landing Harbor Units 1-5, and Tracy Units 1 and 2.
- 2 - The California Regional Water Quality Control Board has not made a determination as to compliance of certain units with the State Thermal Plan. This situation applies to: Humboldt Bay Units 1-3; Hunter's Point Units 2-4; Oleum Units 1 & 2; Potrero Units 1 & 2; San Onofre Units 2 & 3; Cabras; and Tanquissan.
- 3 - Approved/Exempt on the basis of a land development exemption under Federal regulations.
- 4 - Diesel generator operated plant.

CODES:

- AP - Request approved.
EX - Plant exempt.
PR - Preparatory at company level; in case of 316(b) may represent study program underway.
RV - Request under review by regulatory agency.
- To date no determination has been made.

REGION X

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
AK	Chugach Elect. Assn.		15		Ship Creek	Anchorage	OT/CP	-
AK	Golden Valley Elec Assn, Healy		22	1967	Nenana R	Healy	OT	RV
	1 Unit							
AK	DOD-Elmendorf AFB		32		Ship Creek	Anchorage	CP	-
AK	Ft Richardson Fish Rearing Fac					Anchorage	OT/CP	-
AK	Municipal Util Sys		15			Fairbanks	OT	-
WA	Wash Pub Pwr Supply Sys	N	860			Benton Co.	OT	-

RV - Request under review by regulatory agency.

- To date no determination has been made.

12

SOURCE: Federal Power Commission, Steam-Electric Plant Air and Water
Quality Control Data. (Washington, D.C.: Government Printing Office, January 1976. 184+ pp.)

JUL 25 1977

Barry Steam Plant 316(a) and (b)
Demonstration - NPDES No. AL0002879

Charles H. Kaplan, Coordinator
Thermal Analysis Unit

L. Tebo, Jr.
Surveillance and Analysis

SUMMARY

Alabama Power Co. has submitted 316(a) and (b) demonstrations on the Barry Steam Plant directly to you.

It may be interesting for you to look at Table IV-4 on page 152 of the 316(a) document. Note that the condenser rise is 15.0°F in October of 1976. Table III-3 on page 15 of the 316(b) document shows a 25.7% river flow usage for October 19, 1976. The estimated 10-year, 7-day low flow is 5,120 cfs, but may be higher due to new impoundments.

ACTION

Please review and comment by August 30, 1977.

BACKGROUND

Additional information on low flows is available in project file if needed.

J.W.S.
JWSteiner:tap:3rd floor:x2328:7/25/77

Charlie

Re: Survey 316(a)

(1) 10 year - 7 day low flow is calculated at 5120 cfs. This is probably inaccurate due to the addition of several flood control dams to the Alabama - Tombigbee system since the data for this calculation were collected. Critical low flows can now be alleviated by additional discharges from the new reservoir. The 7 day flow from Oct 1976 was 8,153 cfs. The lowest daily flow reported was 6,659 cfs for Oct 19, 1976. Average yearly is 35,100.

(2) The average downstream river temperature is around 15° F. Range is 11.0° to 28.7°

(3) ~~Flow~~ flow intake is 1731 cfs. A surge is about 1300 cfs. Minimum runs around 750 cfs.

(4) The bubble disease affected 60% of the fish in Feb of 1977. This was reported as being caused by abnormally cold river water being super-saturated with air. The severe cold winter of 1977 was the major cause of this.

(5) River oxygen temperatures are raised by as much as 7° C in the zone of discharge. 3° C or more in temperature elevations are found as far as three miles downstream and 1 mile upstream of the discharge.

River water quality

(6) One major concern is the amount of sediment that is being deposited in the river. This is a major concern for the future of the river.

(7) The river is a major source of water for the state. It is a major source of water for the state.

(H) Federal agencies should be asked to
check fish populations during June 1st - 10th
month for two-bubble disease and related
fish kills.

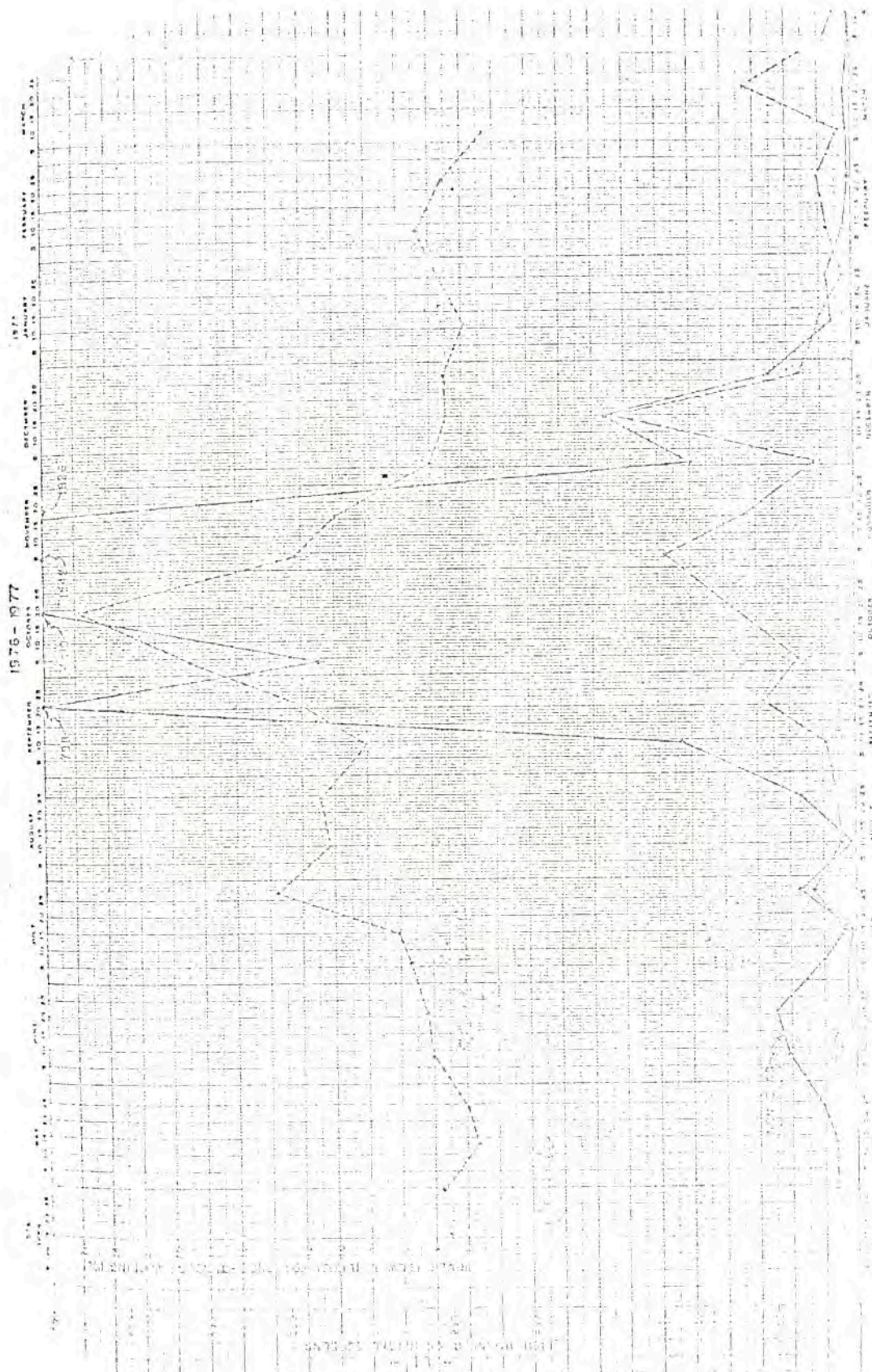
(I) Placid area should be periodically
checked by appropriate Federal agencies
for piscivorous bird concentrations. These
birds will congregate in areas which contain
dead and dying fish. (See gulls, terns, etc.)

(J) Company should provide more data
concerning low flows. A daily average
for several years would help.

(K) Is there any agreement between
SPCO and reservoir authorities concerning
water delivery at low flow conditions?

If not, I recommend tentative disapproval
Bill 5

III - 1



Determinations to be made under 316

Plant	Type	Status
36 Tombigbee	b *	RV - poor study
Berry	2/b	Athens completed (draft by sterner)
Goston	b •	RV?
Br Ferry	*	Entrainment still underway (soon) Impinger
36 Cape Canaveral	2/b	Underway
Indian River	2/b	Underway
Martin	b *	Completed OK Is determination run
Palatka	b •	RV?
Port Everglades	b *	Athens complete - problem
Sanford	b	
St Lucie	*	Modification Request has been rec'd
Anclote		
Crystal R	*	
Higging	*	Report must rec'd
Barton	*	Adjudicatory Request
Lansing Smith	b/? *	status (b)? Thermal Modif
Schoftz	b •	Status (b)?
Kennedy	b ?	Preparation?
Northside	AM	
Big Bend	2/b *	
Georgia	*	They make determinations??
36 Lake Conr Run	*	} They did study - we will want one later also
Mill Cr	*	
Paradise	b *	
Shawnee	b	RV?

* Discuss

ST OPERATOR

PLANT NAME

PERMITTING AGENCY

316A STATUS

315A APPL

316A DEC

316A 315H

APPL 316A

316A DEC

NPDES PERM

AL ALABAMA ELEC COOP

TOWNSHIP 1

NR

0

0

RV*

160723

0

AL000

TOWNSHIP 2

NA

0

0

CA

0

0

AL000

TOWNSHIP 3

NA

0

0

CA

0

0

AL000

ALABAMA POWER CO

BARRY 1-5

RV*

179-30

0

RV*

110530

0

AL000

GORGAS TMD 5-10

AP

150-27

750103

AP

750829

750108

AL000

GREENE COUNTY 1&2

NR

0

0

AP

750217

750701

AL000

JA FAULEY 1

NA

0

0

RV?

0

0

AL000

JA FAULEY 2

NA

0

0

RV?

0

0

AL000

MILLER CT 316A 79-12-20 160930

SOUTHERN ELEC GEN CO

NA

0

0

RV*

751229

0

AL000

EC GASTON 5

NA

0

0

RV*

751229

0

AL000

TENNESSEE VALLEY AUI

AP

0

710530

RV*

750213

0

AL000

RV*

-T 3166 AF 791220 1800930
FLEET OPERATIONAL 1-4

VALLEY 1	NA	U	110330	RV*	180213	U	AL0024619	770401	8205
VALLEY 2	NA	U	110330	RV*	180213	U	AL0024619	770401	8205
VALLEY 3	NA	U	110330	RV*	180213	U	AL0003140	741231	8102
VALLEY 4	NA	U	110330	RV*	180213	U	AL0022080	770530	8208
VALLEY 5	NA	U	110330	RV*	180213	U	AL0022080	770530	8208
VALLEY 6	NA	U	110330	RV*	180213	U	AL0003867	760524	8105
VALLEY 7	NA	U	110330	RV*	180213	U	AL0003875	760524	8105
VALLEY 8	NA	U	110330	RV*	180213	U	AL0003875	760524	8105

* = Tentative (internal) approval - no action yet taken

JUL 21 1977

Mr. James W. Warr
Chief Administrative Officer
Alabama Water Improvement Commission
749 State Office Building
Montgomery, Alabama 36109

Re: Barry Steam Plant
NPDES No. AL0002879

Dear Mr. Warr:

On June 30, 1977, Alabama Power Company submitted to our office 316(a) and (b) demonstrations on the Barry Steam Plant. Our files indicate a copy was forwarded directly by the permittee to you.

If time permits, we would appreciate your comments concerning these demonstrations by August 30, 1977. If you have any questions, please contact Messrs. Lee Tebo at 404/546-2294 or Charles Kaplan at 404/661-2328.

Your assistance in this matter is greatly appreciated.

Sincerely yours,

A. J. Trainor
Paul J. Trainor
Director
Enforcement Division

JWStiener:tap:3rd floor:x2328:7/18/77

Atomic Industrial Forum, Inc.

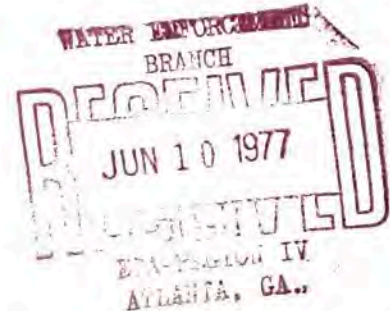
1747 Pennsylvania Avenue, N.W.
Suite 1150
Washington, D.C. 20006
Telephone: (202) 833-9234



AIF
inforum

June 2, 1977

Mr. Charles Kaplan
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30308



Dear Charles:

The INFORUM staff is preparing to update the 316 index this summer. We would appreciate your once again reviewing Region IV for revisions that need to be made. If possible we would like to have your response by July 1. You may recall the last time we updated the index you suggested we verify information concerning possible cutbacks at the Reid and Barton power stations in Kentucky and Alabama. The utilities did not respond in time for our publication deadline, but I hope to record the information on the next update.

Thanks for all your help.

Sincerely,

Nancy Pepper Garrus

Enclosure

Info to Garrus via telcom 8/1/77
CHK

REGION IV

ST.	UTILITY-PLANT	FUEL	Mwe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS
AL	FL. Coop, for W. Pwr	C	75	?	Mobile R	Washington Co	OT	316a 316b - N/A - RV - PR - RV - PR - RV
AL	AL Pwr Co-Barry 5 Units	C	1525	1954	Mobile R	Mobile Co.	OT	- PR - RV - PR - RV
AL	AL Pwr Co-Farley 2 Units	N	1658	1977/1979	Chattahoochee R	Houston Co.	MT	NA - PR
AL	AL Pwr Co-Gordas 6 Units	C	1282	1929	Black Warrior R	Walker Co.	OT	- AP - PR - AP
AL	AL Pwr Co-Greene Co. 2 Units	C	500	1965	Black Warrior R	Green Co.	OT	EX - AP
AL	AL Pwr Co-Barton 4 Units	N	4636	1985-1987	Coosa R	Chilton Co.	MT	NA
AL	AL Pwr Co-Gaston 5 Units	C	1880	1960	Coosa R	Shelby Co.	NT	- PR - PR
AL	TVA-Bellefonte 2 Units	N	2426	1980/1981	Tennessee R	Jackson Co.	NT	NA - VC
AL	TVA-Browns Ferry 3 Units	N	3201	1973/74/76	Tennessee R	Limestone Co.	MT	- EX - PR
AL	TVA-Colbert 5 Units	C	1396	1955	Tennessee R	Colbert Co.	OT	- AP - RV
AL	TVA-Widows Creek 8 Units	C	1978	1952	Tennessee R	Jackson Co.	OT	- AP - RV
FL	City of Tallahassee-Purdom Sta	O/G	118	1951	St Marks R	Wakulla Co.	OT	EX - PR
7 Units								
FL	FL Pwr Corp-Anclote 2 Units	O	1030	1974/1977	Gulf of Mexico	Pinellas Co.	OT	PR - PR
FL	FL Pwr Corp-Bartow 3 Units	O/G	494	1958	Tampa Bay	Pinellas Co.	OT	Adj. Hc. PR
FL	FL Pwr Corp-Crystal R 2 Units	N/O	1789	1976	Gulf of Mexico	Citrus Co.	OT	RV - RV
FL	FL Pwr Corp-Higgins 3 Units	O/G	138	1951	Tampa Bay	Pinellas Co.	OT	PR - PR
FL	FL PEL Co-St Lucie Sta #1	N	810	1976	Atlantic Ocean	St. Lucie Co.	OT	PR - PR
FL	FL PEL Co-St Lucie Sta #2	N	810	1980	Atlantic Ocean	St. Lucie Co.	OT	- VC
FL	FL PEL Co-Riviera Sta 2 Units	O/G	739	1946	Lake Worth	Palm Beach Co.	OT	EX - AP
FL	FL PEL Co-Cape Canaveral 2 Units	O/G	804	1965	Indian R	Brevard Co.	OT	EX - RV
FL	FL PEL Co-Cutler 3 Units	O/G	287	1948/1949	Biscayne Bay	Dade Co.	OT	AP - AP
FL	FL PEL Co-Ft. Meyers 2 Units	O	558	1958	Caloosahatchee R	Lee Co.	OT	RV - RV
FL	FL PEL Co-Lauderdale 2 Units	O/G	312	1926/1957	Dania Canal	Broward Co.	OT	EX - RV
FL	FL PEL Co-Manatee	O	1700		None	Manatee Co.	CL	NA - VC
FL	FL PEL Co-Martin	O	2550		None	Martin	CP	NA - VC
FL	FL PEL Co-Palaska 2 units	O/G	110	1951	St. John's P	Putnam Co.	OT	RV - RV
FL	FL PEL Co-Putnam 2 Units	O	500		St. John's R	Putnam Co.	MT	NA - RV

2 + 2 Cold Storage

(2)

STATUS
316a 316b

AKC only inc. 1000
above
change. CLK - FL
M5 for 10/12

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
GA	GA Pwr Co-Hatch 2 Units	N	1581	1974/1979	Altamaha R	Appling Co.	MT	NA
GA	GA Pwr Co-Wansley	C	1900		Yellow Dirt Cr	Carroll Co.	MT	NA
GA	GA Pwr Co-Scherer	C	3800	1981	Ocmulgee R	Monroe Co.	NT	NA
GA	GA Pwr Co-Vogtle 2 Units	N	2226	1983/1984	Savannah R	Burke Co.	NT	NA
GA	Savannah EEP Co-Effingham	O	163		Savannah R	Chatham Co.	OT	-
GA	Savannah EEP Co-Riverside	G	102		Savannah R	Chatham Co.	OT	EX
GA	Savannah EEP Co-Pt Wentworth	O/G	334		Savannah R	Chatham Co.	OT	EX
—	KY Biq Riv Elec Corp-Coleman	C/G	521	1969	Ohio R	Hancock Co.	OT	EX
3 Units								
—	KY Biq Riv Elec Corp-Reid	C	830	1965	Green R	Henderson Co.	OT	EX
3 Unit								
KY	Cinci Elec & Gas-East Bend	C	1200		Ohio R		MT	NA
2 units								
KY	East KY Power Coop, Inc.-Spurlock	C	300	1976	Ohio R	Mason Co.	MT	NA
—	KY KY Util Co-Ghent 4 units	C	2000		Ohio R	Ghent	MT	NA
—	KY KY Util Co-Green River 4 Units	C	264	1950	Green R	Muhlenberg Co.	OT	EX
—	KY Louisville G&E Co-Cane Run	C/G	1017	1954	Ohio R	Jefferson Co.	OT	EX
6 Units								
—	KY Louisville G&E Co-Mill Creek	C	1527	1972	Ohio R	Jefferson Co.	OT	EX
1 Unit								
KY	Louisville G&E Co-Trimble County	C	2300	1981	Ohio R	Trimble Co.	NT	NA
4 units								
—	KY Owensboro Mun-Smith 2 units	C	416	1964-1974	Ohio R	Daviess Co.	OT	EX
—	KY TVA-Paradise 3 units	C	2558		Green R	Muhlenberg Co.	NT	EX
—	KY TVA-Shawnee 10 Units	C	1750	1953	Ohio R	McCracken Co.	OT	EX
MS	MS Pwr Co-Watson 5 Units	C/O/G	1051	1957-1970	Biloxi R	Harrison Co.	OT/MT/SC	PR
MS	MS P&L Co-Andrus	O	750			Washington Co.	OT	-

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	NA	NA'
MS	MS P&L Co-Grand Gulf 2 Units	N	2500	1979/1981	Mississippi R	Claiborne Co.	NT	NA	NA'
MS	TVA-Yellow Creek 2 Units	N	2600	1983/1984	Tennessee R	Tishomingo Co.	MT	NA	-
NC	Carolina P&L Co-Asheville 2 Units	C	414	1964	French Broad R	Buncombe Co.	CL	-	-
NC	Carolina P&L Co-Brunswick 2 Units	N	1642	1977/1974	Cape Fear Estuary	Brunswick Co.	OT	AP	RV
NC	Carolina P&L Co-Cape Fear 6 Units	C	421	1923	Cape Fear R	Chatham Co.	MT	FX	PR
NC	Carolina P&L Co-Lee 3 Units	C/G	402	1951	Neuse R	Wayne Co.	CP	EX	PR
NC	Carolina P&L Co-Roxboro 4 Units	C	2558	1966-1980	Hico Creek	Person Co.	CL/CF	-	-
NC	Carolina P&L Co-Sutton 3 Units	O/G	672	1954	Cape Fear R	New Hanover Co.	CP	EX	-
NC	Carolina P&L Co-Harris 4 Units	N	3600	1984-1990	Buckhorn Cr	Wake Co.	NT	NA	-
NC	Carolina P&L Co-Mayo 2 Units	C	1440	1982/84	Hico Creek	Person Co.	NT	NA	-
NC	Duke Pwr Co-Marshall Sta 4 Units	C/O	2000	1965	Lake Norman	Catawba Co.	OT	AP	AP
NC	Duke Pwr Co-Riverbend Sta	C/O/G	751	1929	Lake Mtn Isl	Gaston Co.	OT	AP	AP
11 Units									
NC	Duke Pwr Co-Allen Sta 5 Units	C	1155	1957	Lake Wylie	Gaston Co.	OT	AP	AP
NC	Duke Pwr Co-Buck Sta 9 Units	C/O	519	1926	Lake High Rock	Rowan Co.	OT	EX	AP
NC	Duke Pwr Co-Cliffside Sta 5 Units	C	781	1940	Broad R	Rutherford Co.	OT/MT	EX/NA	AP
NC	Duke Pwr Co-Dan River Sta 3 Units	C	284	1949	Dan R	Rockingham Co.	OT	EX	AP
NC	Duke Pwr Co-Bellews Cr	C	2160		Bellews Cr	N. Winston	CL	EX	AP
NC	Duke Pwr Co-McGuire 2 Units	N	2360	1978/1979	Lake Norman	Mecklenburg Co.	OT	-	-
NC	Duke Pwr Co-Perkins 3 Units	N	3840	1983/85/87	Yadkin R	Davie Co.	MT	NA	-
SC	Carolina P&L Co-HB Robinson Sta	N/C	975	1960	Lake Robinson	Darlington Co.	CL	RV	AP
2 Units									
SC	Duke Pwr Co-Catawba 2 Units	N	2306	1979/1980	Lake Wylie	York Co.	MT	NA	-
SC	Duke Pwr Co-Oconee 3 Units	N	2613	1973/73/74	Keowee Lake	Oconee Co.	OT	-	AP
SC	Duke Pwr Co-Lee 3 Units	C/G	345	1951	Saluda R	Anderson Co.	OT	AP	AP
SC	Duke Pwr Co-Cherokee 3 Units	N	3840	1984/86/88	Broad R	Cherokee Co.	MT	NA	-
SC	SC Elec & Gas-Canadys 3 Units	C/G	490	1962	Edisto R	Colleton Co.	OT/CP	PR	PR

D.S. = Data Subm.

REGION IV

ST.	UTILITY-PLANT	FUEL	MWe	OP	RECEIVING WATER	LOCATION	COOLING	STATUS 316a 316b
SC	SC Elec & Gas-Hagood 3 Units	O/G	98	1947	Ashley R	Charleston Co.	OT	EX PR
SC	SC Elec & Gas-McMeekin 2 Units	G	275	1958	Lake Murray	Lexington Co.	OT	EX PR
SC	SC Elec & Gas-Summer 1 Unit	N	900	1979	Monticello Res	Fairfield Co.	OT	AP - VC
SC	SC Elec & Gas-Wateree 2 Units	C	772	1970	Wateree R	Richland Co.	CT	PR-RV PR-RV
SC	SC Elec & Gas-Williams 1 Unit	O	1170	1973	Back R/Cooper R	Berkly Co.	MT	PR-RV PR-RV
SC	SC Elec & Gas-Urghart 3 Units	G	250	1953	Savannah R	Aiken Co.	OT	PR-EX PR-RV
SC	SC Pub Serv-Georgetown	C	630		Turkey Cr	Georgetown Co.	CP/CT	NA PR
SC	SC Pub Serv-Grainger 2 Units	C	163	1966	Waccamaw R	Horry Co.	OT	PR-EX PR
SC	SC Pub Serv-Jeffries 4 Units	C/O	446	1953/1970	Cooper R	Berkeley Co.	OT	EX PR
- TN	TVA-Allen 3 Units	C/G	990	1958	Mississippi R	Shelby Co.	OT	EX RV
- TN	TVA-Bull Run 1 Unit	C	950	1967	Clinch P	Anderson Co.	OT	12/7/78 RV-AP RV AP
- TN	TVA-Gallatin 4 Units	C	1255	1956	Cumberland R	Sumner Co.	OT	RV RV
- TN	TVA-Johnsonville 10 Units	C	1485	1951	Tennessee P	Humphreys Co.	OT	AP RV
- TN	TVA-Kingston 9 Units	C	1700	1954	Clinch/Emory R	Roane Co.	OT	AP RV
- TN	TVA-Watts Bar 4 units	C	240		Tennessee R	Rhea Co.	OT	EX RV
- TN	TVA-Cumberland 2 Units	C	2600	1973	Cumberland R	Stewart Co.	OT	PR-RV PR-RV
- TN	TVA-Sevier 4 Units	C	846	1955	Holston R	Hawkins Co.	OT	PR-RV PR-RV
TN	TVA-Hartsville 4 Units	N	4932	1981-1982	Cumberland R	Trousdale Co.	NT	NA - VC Not yd
- TN	TVA - Phipps Bend 2 Units	N	2466	1984	Holston R	Hawkins Co.	NT	NA PR VC
TN	TVA-Sequoyah 2 Units	N	2296	1977/1978	Tennessee R	Hamilton Co.	NT	- VC
TN	TVA-Watts Bar Nuclear 2 Units	N	2354	1978/1979	Chickamauga Res	Rhea Co.	NT	NA - VC
TN	Clinch R. Bruden R.				Clinch R.		MT	NA - VC

FOOTNOTES:

1. The NRCES permit requires that proposed modifications to the intake and discharge structures be made by June 30, 1977. The permit also requires that 316(a) data be collected in the event thermal limitations cannot be met.

Leave
OK

Plant will have 316(a) determination applicable to next NPDES permit due to multiple mode of cooling operation.

3 - Groundwater intake.

4 - Offstream cooling required for 316(b); a judicatory procedure is underway.

2. - Cold Standby.

CODES:

AP - Request approved.

EX - Plant exempt.

NA - Not applicable.

PR - Preparatory at company level; in case of 316(b) may represent study program underway.

RV - Request under review by regulatory agency.

- To date no determination has been made.

Plant V.C. for no permit yet issued



Atomic Industrial Forum, Inc.

1016 16th Street, N.W.
Suite 850
Washington, D.C. 20036
Telephone: (202) 833-9234

AUG 14 1978

EPA-REGION IV
ATLANTA, GA.

inforum

August 10, 1978

5/28 Index

Mr. Charles Kaplan
U.S. Environmental Protection Agency
Region IV
345 Courtland Street, N.E.
Atlanta, GA 30308

Dear Charles:

Enclosed is a copy of the current update of INFORUM's 316 Index. Within each state, the information is alphabetized by utility and plant name and includes operating capacity, fuel, primary water body, and status of 316(a) and (b) studies.

As you may know, Pepper Garrus has left the project to return to school. The task of compiling the 316 Index will now be handled by Larry Stanback. Larry is looking forward to continuing our working relationship with you in tracking 316 developments.

The time you and your staff have contributed in the midst of your own hectic work load is greatly appreciated. Any comments you have regarding the list are welcome.

Many thanks for your help.

Sincerely,

Sandra L. Nakamura

Sandra L. Nakamura
Research Supervisor

SLN:kb
Enclosure

INFORUM/316

May 1978

Special Editor: NANCY PEPPER GARRUS

316 INTRODUCTION

This index contains a listing of Section 316(a) and (b) applications submitted to state and regional EPA authorities under the Federal Water Pollution Control Act Amendments of 1972. This listing updates the Section 316 Index published in the June/July 1977 issue of INFORUM.

In a continuing effort to verify and update 316 information, the research staff would appreciate hearing from individual utilities listed as to the status of 316 applications within a company. The staff would also like to acquire documentation of demonstrations submitted to the regulatory agency. Documents should be sent to INFORUM Research Supervisor, Sandra Nakamura, Atomic Industrial Forum, 1016 Sixteenth Street, N.W., Suite 850, Washington, D.C. 20036, telephone (202) 833-9234.

This index is organized according to the 10 regions of the U.S. Environmental Protection Agency. Within each region, data are arranged alphabetically by state, operating utility and plant name. For each plant involved in the 316 process, information includes capacity, fuel type, receiving water body, and status of 316(a) and (b) applications.

The determinations of status are given to INFORUM by EPA regional permit officials and state permit officials. The determination codes are as follows:

STATUS 316(a) CODES

- NA Not applicable (no thermal discharges, closed cycle cooling).
- ND No determination.
- NR Not required (thermal discharges meet state water quality standards).
- PR Demonstration/study program is in preparation at applicant level.
- RV Demonstration has been submitted to EPA region or state agency and is under review.
- DR Demonstration rejected due to insufficient information.
- AP 316(a) request approved.
- CA 316(a) request conditionally approved.
- RD 316(a) request denied.
- HA Administrative adjudicatory hearing scheduled or in progress due to request by applicant.

- HI Administrative adjudicatory hearing scheduled or in progress due to request by intervenor.
- JA Judicial review in Federal Court scheduled or in progress due to appeal by applicant.
- JI Judicial review in Federal Court scheduled or in progress due to appeal by intervenor.

STATUS 316(b) CODES

- ND No determination.
- NR No monitoring is required. In essence, existing intake structure is acceptable.
- PR Monitoring program is in progress at company level. Nothing has been submitted to agency.
- RV 316(b) demonstration or report has been submitted to permit agency and is under review.
- DR Demonstration rejected due to insufficient information. No decision on intake structure.
- AP Existing intake structure approved. No monitoring or modifications necessary.
- CA Existing structure conditionally approved; further monitoring is required.
- AN Existing intake approved with modifications; no further monitoring required.
- AM Existing intake approved with modifications.
- RD Request denied.
- HA Administrative adjudicatory hearing scheduled or in progress due to request by applicant.
- HI Administrative adjudicatory hearing scheduled or in progress due to request by intervenor.
- JA Judicial review in Federal Court scheduled or in progress due to appeal by applicant.
- JI Judicial review in Federal Court scheduled or in progress due to appeal by intervenor.

EPA REGIONS

REGION I : Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

REGION II : New Jersey, New York, Puerto Rico, and Virgin Islands.

REGION III : Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, and West Virginia.

REGION IV : Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.

REGION V : Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin.

REGION VI : Arkansas, Louisiana, New Mexico, Oklahoma, and Texas.

REGION VII : Iowa, Kansas, Missouri, and Nebraska.

REGION VIII: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

REGION IX : Arizona, California, Guam, Hawaii, and Nevada.

REGION X : Alaska, Idaho, Oregon, and Washington.

Note: Footnotes for all plants follow EPA Region X at the end of this index.

ACKNOWLEDGEMENTS

We are indebted to the following EPA and state environmental officials for their assistance in providing us with the appropriate information.

HEADQUARTERS (Permit Division)	Steven Bugbee
REGION I	Robert Leger Ted Landry
REGION II	Harvey Lunenfeld Barbara Pastalove
REGION III	Bruce Smith Ron Preston James LaBuy Dr. Ramesh Dwivedy (State of Delaware) S. N. Chia (Commonwealth of Virginia) Lawrence Ramsey (State of Maryland)
REGION IV	Charles Kaplan

REGION V

Gary Milburn
Vacys J. Saulys
Robert Chiesa (State of Wisconsin)
Larry Olson (State of Minnesota)
Mark J. Lahtinen (State of Minnesota)
Dr. Ronald Waybrant (State of Michigan)
Chris Yoder (State of Ohio)

REGION VI

Robert Vickery
Dave Peters

REGION VII

Carl Walter
Mike Turvey

REGION VIII

James Dunn

REGION IX

James Bartlett

REGION X

Robert Stamnis

SECTION 316 INDEX

REGION I

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
CT	CONNECTICUT LIGHT & POWER	DEVON 1&3-8	455	OIL	HOUSATONIC RIVER	PR	PR
		MILLSTONE 1	660	NUCLEAR BWR	NIANTIC BAY	PR	PR
		MILLSTONE 2	830	NUCLEAR PWR	NIANTIC BAY	PR	PR
		MILLSTONE 3	1150	NUCLEAR PWR	NIANTIC BAY	PR	PR
	CONNECTICUT YANKEE PWR CO	MONTVILLE 1-6	559	OIL	THAMES RIVER	PR	PQ
		NORWALK HARBOR 1&2	326	OIL	NORWALK HARBOR	PR	PR
		CONNECTICUT YANKEE 1	600	NUCLEAR PWR	CONNECTICUT RIVER	PR	PR
		NEW LONDON SUB BASE	11	OIL	THAMES RIVER	PR	PR
	DEPT OF DEFENSE	MIDDLETOWN 1-3	422	OIL	CONNECTICUT RIVER	PR	PR
		MIDDLETOWN 4	400	OIL	CONNECTICUT RIVER	PR	PR
		SOUTH MEADOW 1-6	212	OIL	CONNECTICUT RIVER	PR	PR
		BRIDGEPORT 1&2	262	OIL	BRIDGEPORT HARBOR	PR	PR
	HARTFORD ELEC LIGHT CO	BRIDGEPORT 3	400	OIL	BRIDGEPORT HARBOR	PR	PR
		ENGLISH 1-8	150	OIL	WILL RIVER	PR	PR
		NEW HAVEN HARBOR 1	465	OIL	NEW HAVEN HARBOR	PR	PR
		STEEL POINT 1-11	158	OIL	BRIDGEPORT HARBOR	PR	PR
MA	BIRD & SON INC	MASSACHUSETTS	5	OIL	NEPONSET RIVER	NR	AP
		EDGAR 4-6	243	OIL	WEYMOUTH FORE RIVER	NR	RV
		L STREET	155	OIL	BOSTON HARBOR	NR	PR
		MYSTIC 4-6	388	OIL	MYSTIC RIVER	NR	RV
	BOSTON EDISON CO	MYSTIC 7	591	OIL	MYSTIC RIVER	NR	RV
		PILGRIM 1	655	NUCLEAR BWR	CAPE COD BAY	HI	HI
		PILGRIM 2	1180	NUCLEAR PWR	CAPE COD BAY	HI	HI
		ALLEN STREET 1-3	22	OIL	MONATIQUOT RIVER	NR	AP
	BRAINTREE ELEC LIGHT DEPT	POTTER STATION 1	13	OIL	WEYMOUTH FORE RIVER	NR	AP

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
	CAMBRIDGE ELEC LIGHT CO	BLACKSTONE STREET	22	OIL-GAS	CHARLES RIVER	NR	AP
		KENDALL SQUARE 1-3	75	OIL-GAS	CHARLES RIVER	NR	AP
	CANAL ELEC CO	CANAL 1	543	OIL	CAPE COD CANAL	CA	RV
		CANAL 2	560	OIL	CAPE COD CANAL	CA	RV
	HOLYOKE GAS & ELEC DEPT	CABOT-HOLYOKE 6&8&9	26	OIL-GAS	CONNECTICUT RIVER	NR	AP
	HOLYOKE WATER POWER CO	MOUNT TOM 1	136	OIL	CONNECTICUT RIVER	NR	AP
		RIVERSIDE (MA) 2&3&9	23	OIL	CONNECTICUT RIVER	NR	AP
	MASSACHUSETTS BAY TRANSIT	LINCOLN (MA)	60	OIL	BOSTON HARBOR	NR	AP
		SOUTH BOSTON	120	OIL	BOSTON HARBOR	NR	AP
	MONTAUP ELEC CO	SOMERSET 1-6	342	OIL	TAUNTON RIVER	NR	RV
	NANTUCKET ELEC CO	NANTUCKET	12	OIL	NANTUCKET HARBOR	NR	AP
	NEW BEDFORD GAS & LIGHT	CANNON STREET	83	OIL-GAS	ACUSHNET RIVER	NR	AP
	NEW ENGLAND POWER CO	BRAYTON POINT 1-3	1082	OIL	TAUNTON RIVER	RV	RV
		BRAYTON POINT 4	442	OIL	TAUNTON RIVER	RV	RV
		SALEM HARBOR 1-4	802	OIL	SALEM HARBOR	NR	RV
	TAUNTON MUNI LIGHT CO	BF CLEARY 8	28	OIL	TAUNTON RIVER	NR	RV
		WEST WATER ST 4-7	44	OIL	TAUNTON RIVER	NR	AP
	WESTERN MA ELEC CO	WEST SPRINGFIELD 4-7	210	OIL-GAS	CONNECTICUT RIVER	NR	AP
	YANKEE ATOMIC ELEC CO	YANKEE 1	185	NUCLEAR PWR	DEERFIELD RIVER	NR	AP
ME	BANGOR HYDRO ELEC CO	EM GRAHAM 3-5	58	OIL	PENOBSCOT RIVER	NR	AP
		MACHIAS	2	OIL	EAST MACHIAS RIVER	NR	AP
	CENTRAL MAINE POWER CO	CAPE 1-3	24	OIL	FORE RIVER	NR	AP
		MASON 1-5	139	OIL	SHEEPSHOT BAY	NR	AP
	WF WYMAN 1-3	WF WYMAN 1-3	209	OIL	CASCO BAY	AP	AP
	WF WYMAN 4	WF WYMAN 4	600	OIL	CASCO BAY	CA	RV

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
NH	MAINE PUBLIC SERVICE CO	CARIBOU 1&2	28	OIL	AROOSTOOK RIVER	NR	AP
	MAINE YANKEE ATOMIC POWER	MAINE YANKEE 1	810	NUCLEAR PWR	BACK RIVER	RV	RV
		MANCHESTER 1	20	OIL	MERRIMACK RIVER	NR	AP
	PUBLIC SER NEW HAMPSHIRE	DANIEL STREET 3&5-7	22	OIL	PISCATAQUA RIVER	NR	AP
		MERRIMACK 1&2	460	COAL-OIL	MERRIMACK RIVER	NR	RV
		NEWINGTON 1	414	OIL	PISCATAQUA RIVER	PR	RV
		SCHILLER 3-6	179	OIL	PISCATAQUA RIVER	NR	AP
		SEABROOK 1	1200	NUCLEAR PWR	GULF OF MAINE	JI	JI
		SEABROOK 2	1200	NUCLEAR PWR	GULF OF MAINE	JI	JI
		RHODE ISLAND	5	OIL	TENMILE RIVER	NR	AP
RI	BIRD & SON INC						
	NARRAGANSETT ELEC CO	MANCHESTER ST 9-11	132	OIL-GAS	PROVIDENCE BAY	NR	RV
VT		SOUTH STREET	188	OIL	PROVIDENCE BAY	NR	RV
	NEWPORT ELEC CORP	WEST HOWARD ST	13	OIL-GAS	NARRAGANSETT BAY	NR	AP
	VERMONT YANKEE NUC PWR	VERMONT YANKEE 1	563	NUCLEAR BWR	CONNECTICUT RIVER	RV	RV

REGION II

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
NJ	ATLANTIC CITY ELEC CO	BL ENGLAND 1&2	299	COAL-OIL	ATLANTIC CITY HARBOR	NR	RV
	DEEPWATER OPERATING CO	DEEPWATER 1 3-7	309	COAL-OIL-GAS	DELAWARE RIVER	RV	RV
	JERSEY CENTRAL POWER & LT	FORKED RIVER 1	1070	NUCLEAR PWR	FORKED RIVER	NA	PR
		GILBERT 1-3	126	OIL-GAS	DELAWARE RIVER	ND	RV
		HE WERNER 1 3-4	116	OIL	RARITAN RIVER	NR	RV
		OYSTER CREEK 1	550	NUCLEAR BWR	FORKED RIVER	PR	PR
		SAYREVILLE 1-5	345	OIL-GAS	RARITAN RIVER	ND	RV
	PUBLIC SERVICE ELEC & GAS	ATLANTIC 1	1150	NUCLEAR PWR	ATLANTIC OCEAN	PR	PR
		ATLANTIC 2	1150	NUCLEAR PWR	ATLANTIC OCEAN	PR	PR
		BERGEN 1&2	650	OIL-GAS	OVERPECK CREEK	PR	PR
		BURLINGTON 105	42	WASTE HEAT	DELAWARE RIVER	PR	PR
		BURLINGTON 5-7	443	COAL-OIL	DELAWARE RIVER	NR	PR
		ESSEX 1	117	OIL-GAS	PASSAIC RIVER	PR	PR
		HOPE CREEK 1	1067	NUCLEAR BWR	DELAWARE RIVER	NA	PR
		HOPE CREEK 2	1067	NUCLEAR BWR	DELAWARE RIVER	NA	PR
NY		HUDSON 1&2	1114	COAL-OIL-GAS	HACKENSACK RIVER	PR	PR
		KEARNEY 7&8	294	OIL-COAL	HACKENSACK RIVER	RV	PR
		LINDEN 1&2	520	OIL	ARTHUR KILL	PR	PR
		LINDEN 4	93	OIL	ARTHUR KILL	PR	PR
		MERCER 1&2	767	COAL-GAS	DELAWARE RIVER	PR	PR
		SALEM 1	1090	NUCLEAR PWR	DELAWARE RIVER	RV	PR
		SALEM 2	1115	NUCLEAR PWR	DELAWARE RIVER	RV	PR
		SEWAREN 1-5	820	OIL-GAS	ARTHUR KILL	PR	PR
	CENTRAL HUDSON GAS & ELEC	DANSKAMMER POINT 1-4	532	GAS-OIL	HUDSON RIVER	RV	PR
		ROSETON 1&2	1242	OIL	HUDSON RIVER	RV	HA

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
CONSOLIDATED EDISON CO	ARTHUR KILL 2&3	ARTHUR KILL	826	OIL-COAL	ARTHUR KILL	RV	ND
		ASTORIA 1-5	1515	OIL-GAS	EAST RIVER	RV	RV
		EAST RIVER 5-7	492	OIL-GAS	EAST RIVER	RV	NR
		INDIAN POINT 2	873	NUCLEAR PWR	HUDSON RIVER	RV	HA
	LONG ISLAND LIGHTING CO	EF BARRETT 1&2	376	OIL-GAS	HOG ISLAND CHANNEL	RV	RV
		FAR ROCKAWAY 4	114	OIL-GAS	MOTT'S BASIN	RV	RV
		GLENWOOD 2-5	378	OIL-GAS	HEMPSTEAD HARBOR	RV	RV
		JAMESPORT 1	1150	NUCLEAR PWR	LONG ISLAND SOUND	RV	RV
		JAMESPORT 2	1150	NUCLEAR PWR	LONG ISLAND SOUND	RV	RV
		NORTHPORT 1-3	1161	OIL	LONG ISLAND SOUND	RV	RV
		NORTHPORT 4	387	OIL	LONG ISLAND SOUND	RV	RV
	NEW YORK STATE ELEC & GAS	PORT JEFFERSON 1&2	92	OIL	PORT JEFFERSON HARBOR	RV	RV
		PORT JEFFERSON 3&4	376	OIL	PORT JEFFERSON HARBOR	RV	RV
NIAGARA MOHAWK POWER CORP	ALBANY 1-4	SHOREHAM 1	819	NUCLEAR BWR	LONG ISLAND SOUND	RV	PR
		CAYUGA 1	850	COAL	LAKE CAYUGA	RV	RV
		GLENRIDGE 1-4	170	COAL	SENECA LAKE	RV	RV
		GOUGEY 7&8	104	COAL	SUSQUEHANNA RIVER	RV	RV
	CR HUNTLEY 63-68	HICKLING 1&2	75	COAL	CHEMUNG RIVER	RV	RV
		JENNISON 1&2	68	COAL	SUSQUEHANNA RIVER	RV	RV
		MILLIKEN 1&2	270	COAL-OIL	LAKE CAYUGA	RV	ND
		ALBANY 1-4	400	OIL-COAL	HUDSON RIVER	RV	RV
	DUNKIRK 1-4	CR HUNTLEY 63-68	828	COAL	NIAGARA RIVER	RV	RV
		DUNKIRK 1-4	628	COAL	LAKE ERIE	RV	RV
		LAKE ERIE 1	850	COAL	LAKE ERIE	NA	RV
		LAKE ERIE 2	850	COAL	LAKE ERIE	NA	RV

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		NINE MILE POINT 1	610	NUCLEAR BWR	LAKE ONTARIO	RV	RV
		NINE MILE POINT 2	1100	NUCLEAR BWR	LAKE ONTARIO	NA	RV
		OSWEGO 1-4	368	OIL	LAKE ONTARIO	RV	RV
		OSWEGO 5	850	OIL	LAKE ONTARIO	RV	RV
		OSWEGO 6	850	OIL	LAKE ONTARIO	RV	RV
	ORANGE & ROCKLAND UTIL	BOWLINE POINT 1&2	1242	OIL-GAS	HUDSON RIVER	RV	HA
		LOVETT 1-5	497	OIL-GAS	HUDSON RIVER	RV	RV
	POWER AUTH OF NEW YORK	ARTHUR KILL 1	700	COAL-OIL-REFUSE	ARTHUR KILL	NA	PR
		ASTORIA 6	826	OIL-GAS	EAST RIVER	RV	PR
		GREENE COUNTY 1	1200	NUCLEAR PWR	HUDSON RIVER	NA	PR
		INDIAN POINT 3	873	NUCLEAR PWR	HUDSON RIVER	RV	HA
		JA FITZPATRICK 1	821	NUCLEAR BWR	LAKE ONTARIO	RV	RV
	ROCHESTER GAS & ELEC CORP	BEE BEE	188	OIL	GENESEE RIVER	RV	RV
		RE GINNA 1	490	NUCLEAR PWR	LAKE ONTARIO	RV	RV
		RUSSELL 1-4	254	COAL	LAKE ONTARIO	RV	RV
		STERLING 1	1150	NUCLEAR PWR	LAKE ONTARIO	RV	RV
PR	PUERTO RICO WTR RES AUTH	AGUIRRE 1&2	920	OIL	JOSES BAY	PR	PR
		NORTH COAST 1	583	NUCLEAR PWR	ATLANTIC OCEAN	RV	RV
		PALO SECO 1-4	620	OIL	SAN JUAN BAY	NR	RV
		SOUTH COAST 1-6	1110	OIL	GUYANILLA BAY	RV	NR
VI	VIRGIN ISLANDS WTR & PWR	SAINT CROIX	35	OIL	CHRISTIANSTED HARBOR	NR	PR
		SAINT THOMAS	64	OIL	LINDBERGH BAY	NR	PR

REGION III

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
DC	POTOMAC ELEC POWER CO	BENNING 10-14	173	OIL	ANACOSTIA RIVER	NR	PR
		BENNING 15&16	580	OIL	ANACOSTIA RIVER	NA	PR
		BUZZARD POINT 1-6	273	OIL	ANACOSTIA RIVER	NR	PR
DE	DELMARVA POWER & LIGHT	EDGE MOOR 1-5	769	OIL	DELAWARE RIVER	NR	PR
		INDIAN RIVER 1-3 (DE	340	COAL-OIL	INDIAN RIVER INT ONLY	AP	PR
		CALVERT CLIFFS 1	845	NUCLEAR PWR	CHESAPEAKE BAY	PR	PR
MD	BALTIMORE GAS & ELEC CO	CALVERT CLIFFS 2	845	NUCLEAR PWR	CHESAPEAKE BAY	PR	PR
		CP CRANE 1&2	399	COAL-OIL	SENECA CREEK	PR ³	PR
		HA WAGNER 1-4	1043	COAL-OIL	PATAPSCO RIVER	3	PR
	DELMARVA POWER & LIGHT	RIVERSIDE (MD) 1-5	333	OIL-COAL	PATAPSCO RIVER	3	PR
		VIENNA 5-7	68	OIL	NANTICOKE RIVER	NR	NR
		VIENNA 8	162	OIL	NANTICOKE RIVER	NR	NR
	POTOMAC EDISON CO	RP SMITH 3&4	110	COAL	POTOMAC RIVER	3	3
		CHALK POINT 1&2	726	COAL-OIL	PATUXENT RIVER	PR ³	PR
		CHALK POINT 3	660	OIL	PATUXENT RIVER	PR ³	PR
	POTOMAC ELEC POWER CO	CHALK POINT 4	600	OIL	PATUXENT RIVER	PR ³	PR
		DICKERSON 1-3	585	COAL-OIL	POTOMAC RIVER	PR ³	PR
		MORGANTOWN 1	625	COAL-OIL	POTOMAC RIVER	RV	PR
PA	DUQUESNE LIGHT CO	MORGANTOWN 2	625	OIL-COAL	POTOMAC RIVER	RV	PR
		BEAVER VALLEY 1	852	NUCLEAR PWR	OHIO RIVER	NA	AP
		BEAVER VALLEY 2	852	NUCLEAR PWR	OHIO RIVER	NA	AP
		CHESWICK 1	565	COAL-OIL	ALLEGHENY RIVER	CA	PR
		ELRAMA 1-4	510	COAL-OIL	MONONGAHELA RIVER	HA	PR
		F PHILLIPS 1-4	411	COAL-OIL	OHIO RIVER	NR	PR
		SHIPPINGPORT 1	100	NUCLEAR PWR	OHIO RIVER	NR	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	3169
GENERAL PUBLIC UTILITIES	METROPOLITAN EDISON CO	HOWER CITY 1&2	1200	COAL	TWO LICK CREEK	NA	PR
		PORTLAND 1&2	427	COAL	DELAWARE RIVER	NR	RV
		THREE MILE ISLAND 1	819	NUCLEAR BWR	SUSQUEHANNA RIVER	NA	PR
	OHIO EDISON CO	TITUS 1-3	225	COAL	SCHUYLKILL RIVER	NR	PR ²
		BRUCE MANSFIELD 1&2	1670	COAL	OHIO RIVER	NA	CA
		CONEMAUGH 1&2	1872	COAL-OIL	CONEMAUGH RIVER	NA	NR
	PENNSYLVANIA ELEC CO	FRONT STREET 1-5	119	COAL	PRESQUE ISLE BAY	NR ¹	PR
		KEYSTONE 1&2	1872	COAL-OIL	CROOKED CREEK	NA	NR
		SEWARD 3-5	241	COAL	CONEMAUGH RIVER	NR	NR
		SHAWVILLE 1-4	624	COAL	SUSQUEHANNA RIVER	NR	NR
		WARREN 1&2	84	COAL	ALLEGHENY RIVER	NR	PR
PENNSYLVANIA POWER & LT		WILLIAMSBURG 5	33	COAL	JUNIATA RIVER	CA	PR
		BRUNNER ISLAND 1-3	1558	COAL	SUSQUEHANNA RIVER	CA	RV
		MARTINS CREEK 1&2	312	COAL-OIL	DELAWARE RIVER	NR	RV
		MARTINS CREEK 3	850	COAL-OIL	DELAWARE RIVER	NR	RV
		MARTINS CREEK 4	820	COAL-OIL	DELAWARE RIVER	NR	RV
	PENNSYLVANIA POWER CO	SUNBURY 1-4	410	COAL-OIL	SUSQUEHANNA RIVER	NR	RV
		SUSQUEHANNA 1	1050	NUCLEAR BWR	SUSQUEHANNA RIVER	NA	NR
		SUSQUEHANNA 2	1050	NUCLEAR BWR	SUSQUEHANNA RIVER	NA	NR
		NEW CASTLE 1-5	506	COAL-OIL	BEAVER RIVER	RV	PR
		BARBADOS 3&4	132	OIL	SCHUYLKILL RIVER	RV	RV
PHILADELPHIA ELEC CO		CHESTER 5&6	130	OIL-GAS	DELAWARE RIVER	NR	RV
		CROMBY 1&2	418	COAL-OIL	SCHUYLKILL RIVER	RV	RV
		DELAWARE 7&8	312	OIL-COAL	DELAWARE RIVER	NR	RV
		EDDYSTONE 1&2	708	COAL-OIL	DELAWARE RIVER	NR	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		EDDYSTONE 3&4	771	COAL-OIL	DELAWARE RIVER	NR	PR
		LIMERICK 1	1065	NUCLEAR BWR	SCHUYLKILL RIVER	NA	NR
		LIMERICK 2	1065	NUCLEAR BWR	SCHUYLKILL RIVER	NA	NR
		PEACH BOTTOM 2	1065	NUCLEAR BWR	SUSQUEHANNA RIVER	RV	RV
		PEACH BOTTOM 3	1065	NUCLEAR BWR	SUSQUEHANNA RIVER	RV	RV
		RICHMOND 9&12	355	OIL	DELAWARE RIVER		RV
		SCHUYLKILL 1&3&9	275	OIL	SCHUYLKILL RIVER	RV	RV
		SOUTHWARK 1&2	346	OIL	DELAWARE RIVER	NR	RV
	POTOMAC EDISON CO	HATFIELDS FERRY 1	576	COAL-OIL	MONONGAHELA RIVER	NR	PR
		HATFIELDS FERRY 2	576	COAL-OIL	MONONGAHELA RIVER	NR	PR
		HATFIELDS FERRY 3	576	COAL-OIL	MONONGAHELA RIVER	NA	PR
	UNITED GAS IMPROVEMENT CO	HUNLOCK 1-3	50	COAL	SUSQUEHANNA RIVER	NR	AP
	WEST PENN POWER CO	ARMSTRONG 1&2	326	COAL	ALLEGHENY RIVER	NR	RV
		MILESBERG 1&2	46	OIL	SPRING CREEK	NR	PR
		MITCHELL 1-3 (PA)	449	COAL-OIL-GAS	MONONGAHELA RIVER	RV	PR
		SPRINGDALE 1-8	415	OIL	ALLEGHENY RIVER	NR	PR
VA	APPALACHIAN POWER CO	CLINCH RIVER 1-3	714	COAL-OIL	CLINCH RIVER	NA	AP
		GLEN LYN	406	COAL-OIL	NEW RIVER	AP	PR
	POTOMAC ELEC POWER CO	POTOMAC RIVER 1-5	499	COAL-OIL	POTOMAC RIVER	NR	PR
	VIRGINIA ELEC & POWER CO	BREMO BLUFF 3&4	254	COAL-OIL	JAMES RIVER	NR	PR
		CHESTERFIELD 1-3	245	COAL-OIL	JAMES RIVER	NR	RV
		CHESTERFIELD 4-6	1241	COAL-OIL	JAMES RIVER	NR	RV
		PORTSMOUTH 1-4	650	OIL	ELIZABETH RIVER	PR	PR
		POSSUM POINT 1-4	491	OIL	POTOMAC RIVER INT ONLY	PR	RV
		SURRY 1	822	NUCLEAR PWR	JAMES RIVER	AP	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
WV	ALLEGHENY POWER SYSTEM	SURRY 2	822	NUCLEAR PWR	JAMES RIVER	AP	PR
		YORKTOWN 1&2	376	OIL-GAS	YORK RIVER	NR	RV
		PLEASANTS 1	684	COAL	OHIO RIVER	NA	NR
		PLEASANTS 2	684	COAL	OHIO RIVER	NA	NR
	APPALACHIAN POWER CO	AMOS 1&2	1632	COAL-OIL	LITTLE SCARY CREEK	NR	NR
		AMOS 3	1300	COAL	LITTLE SCARY CREEK	NR	NR
		CABIN CREEK 1-6	217	COAL-GAS	CABIN CREEK	NA	NR
		KANAWHA RIVER 1-4	440	COAL-OIL	KANAWHA RIVER	RV	PR
	CENTRAL OPERATING CO	PHIL SPORN 1-5	1108	COAL-OIL	OHIO RIVER	AP	PR
	MONONGAHELA POWER CO	RIVESVILLE 5&6	110	COAL-OIL-GAS	MONONGAHELA RIVER	RV	PR
		WILLOW ISLAND 1&2	215	COAL-OIL	OHIO RIVER	NR	AP
		KAMMER 1-3	714	COAL-OIL	OHIO RIVER	AP	PR
		ALBRIGHT 1-3	278	COAL-OIL	CHEAT RIVER	NR	NR
VIRGINIA	ELEC & POWER CO	FORT MARTIN 1&2	1152	COAL-OIL	MONONGAHELA RIVER	NA	PR
		HARRISON 1-3	2052	COAL-OIL-GAS	WEST FORK RIVER	NA	PR
		MOUNT STORM 1-3	1662	COAL-OIL	STONY RIVER	PR	PR

REGION IV

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
AL	ALABAMA ELEC COOP	TOMBIGBEE 1	75	COAL	TOMBIGBEE RIVER	NR	RV ✓
		TOMBIGBEE 2	235	COAL	TOMBIGBEE RIVER	NA	ND ✓
		TOMBIGBEE 3	235	COAL	TOMBIGBEE RIVER	NA	ND ✓
	ALABAMA POWER CO	BARRY 1-5	1771	COAL	MOBILE RIVER	RV	RV ✓
		EC GASTON 1-4	1015	COAL	COOSA RIVER	PR	PR ✓
		EC GASTON 5	952	COAL	COOSA RIVER	NA	PR ✓
		GORGAS TWO 10	1546	COAL	BLACK WARRIOR RIVER	AP	AP ✓
		GREENE COUNTY 1&2	568	COAL	BLACK WARRIOR RIVER	NR	AP ✓
		JM FARLEY 1	829	NUCLEAR PWR	CHATTahoochee RIVER	NA	PR ✓
		JM FARLEY 2	829	NUCLEAR PWR	CHATTahoochee RIVER	NA	PR ^{SR?} ✓
	TENNESSEE VALLEY AUTH	BELLEFONTE 1	1213	NUCLEAR PWR	GUNTERSVILLE RESERVOIR	ND	ND ✓
		BELLEFONTE 2	1213	NUCLEAR PWR	GUNTERSVILLE RESERVOIR	ND	ND ✓
		BROWNS FERRY 1	1065	NUCLEAR BWR	WHEELER RESERVOIR	AP	RV ✓
		BROWNS FERRY 2	1065	NUCLEAR BWR	WHEELER RESERVOIR	AP	RV ✓
		BROWNS FERRY 3	1065	NUCLEAR BWR	WHEELER RESERVOIR	AP	RV ✓
		COLBERT 1-5	1396	COAL	PICKWICK RESERVOIR	AP	AP ✓
		WIDOWS CREEK 1-6	855	COAL	GUNTERSVILLE RESERVOIR	AP	AP ✓
		WIDOWS CREEK 7&8	1125	COAL	GUNTERSVILLE RESERVOIR	AP	AP ✓
FL	FLORIDA POWER & LIGHT CO	CAPE CANAVERAL 1&2	804	OIL-GAS	INDIAN RIVER	PR NR	RV-PR ✓
		CUTLER 4-6	306	OIL-GAS	BISCAYNE BAY	AP	AP ✓
		FORT MEYERS 1&2	558	OIL	CALOOSAHATCHEE RIVER	AP	AP ✓
		MARTIN COUNTY 1	863	OIL	ST LUCIE CANAL	NA	PR ✓
		MARTIN COUNTY 2	863	OIL	ST LUCIE CANAL	NA	PR ✓
		PALATKA 1&2	110	OIL-GAS	ST JOHNS RIVER	NR	RV ✓
		PORT EVERGLADES 1-4	1254	OIL-GAS	PORT EVERGLADES INLET	NR	RV ✓

Barton dropped?

344

Dr Soto Dropped
S. Dado Dropped

Combine

Combine

Cold Study

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
GA	GEORGIA POWER CO	BIG BEND 3	446	COAL	HILLSBOROUGH BAY	RV	RV ✓
		ARKWRIGHT 1-4	181	COAL	OCMULGEE RIVER	NR	PR
		ATKINSON 1-4	240	COAL-OIL-GAS	CHATTAHOOCHEE RIVER	NR	PR ✓
		BOWEN 1&2	1595	COAL	ETOWAH RIVER	NA	PR ✓ NR ?
		BOWEN 3&4	1809	COAL-OIL	ETOWAH RIVER	NA	PR ✓ NR ?
		HAMMOND 1-4	953	COAL-OIL	COOSA RIVER	NR	PR ✓
		HARLEE BRANCH 1-4	1746	COAL	LAKE SINCLAIR	NR	ND ✓ PR ?
		HATCH 1	786	NUCLEAR BWR	ALTAMAHA RIVER	NA	PR ✓
		HATCH 2	795	NUCLEAR BWR	ALTAMAHA RIVER	NA	PR ✓
		JACK MCDONOUGH 1&2	598	COAL	CHATTAHOOCHEE RIVER	NR	PR ✓ ND ?
		MCANUS 1&2	144	OIL	TURTLE RIVER	NR	ND ✓ PR ?
		MITCHELL 1-3	217	COAL	FLINT RIVER	NR	ND ✓ PR ?
		SCHERER 1	952	COAL	RUM CREEK	NA	ND ✓
		SCHERER 2	952	COAL	RUM CREEK	NA	ND ✓
		SCHERER 3	952	COAL	RUM CREEK	NA	ND ✓
		SCHERER 4	952	COAL	RUM CREEK	NA	ND ✓
		VOGTLE 1	1113	NUCLEAR PWR	SAVANNAH RIVER	NA	ND ✓
		VOGTLE 2	1113	NUCLEAR PWR	SAVANNAH RIVER	NA	ND ✓
		WANSLEY 1	952	COAL-OIL	YELLOW DIRT CREEK	NA	PR ✓ NR ?
		WANSLEY 2	952	COAL-OIL	YELLOW DIRT CREEK	NA	PR ✓ NR ?
		YATES 1-5	678	COAL	CHATTAHOOCHEE RIVER	NR	PR ✓
		YATES 6&7	808	COAL	CHATTAHOOCHEE RIVER	NA	PR ✓
	SAVANNAH ELEC & POWER CO	EFFINGHAM 1	163	OIL	SAVANNAH RIVER	NR	ND ✓
		EFFINGHAM 2	250	COAL	SAVANNAH RIVER	NR	ND ✓
		PORT WENTWORTH 1-4	333	OIL-GAS	SAVANNAH RIVER	NR	PR ✓

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
KY	BIG RIVERS ELEC CORP	COLEMAN 1-3	496	COAL	OHIO RIVER	NR	AP ✓
		REID 1	80	COAL	GREEN RIVER	NR	AP ✓
		REID 2&3	300	COAL-OIL	GREEN RIVER	NA	AP ✓
		REID 4	240	COAL	GREEN RIVER	NA	SR PR ✓ <i>Future</i>
		REID 5	240	COAL	GREEN RIVER	NA	SR PR ✓ <i>Future</i>
	CINCINNATI GAS & ELEC CO	EAST BEND 1	669	COAL	OHIO RIVER	NA	ND ✓ <i>(will be AP)</i>
		EAST BEND 2	669	COAL	OHIO RIVER	NA	ND ✓
	KENTUCKY UTILITIES CO	GHENT 1	522	COAL	OHIO RIVER	NA	AP ✓
		GHENT 2	500		OHIO RIVER	NA	AP ✓
		GHENT 3	556	COAL	OHIO RIVER	NA	ND ✓ <i>SR</i>
		GHENT 4	556	COAL	OHIO RIVER	NA	ND ✓ <i>SR</i>
	LOUISVILLE GAS & ELEC CO	GREEN RIVER 1-4	264	COAL	GREEN RIVER	AP	AP ✓
		CANE RUN 1-6	1008	COAL-GAS	OHIO RIVER	NR	RV ✓
		MILL CREEK 1	356	COAL	OHIO RIVER	NR	RV ✓
		MILL CREEK 2	326	COAL	OHIO RIVER	NA	RV ✓
MS	OWENSBORO MUNICIPAL UTIL	MILL CREEK 3	425	COAL	OHIO RIVER	NA	RV ✓
		TRIMBLE COUNTY 1	495	COAL	UNKNOWN	NA	ND ✓ <i>SR</i>
		TRIMBLE COUNTY 2	495	COAL	UNKNOWN	NA	ND ✓ <i>SR</i>
		TRIMBLE COUNTY 3	675	COAL	UNKNOWN	NA	ND ✓ <i>SR</i>
	TENNESSEE VALLEY AUTH	ELMER SMITH 1	151	COAL	OHIO RIVER	AP	AP ✓ <i>Combine</i>
		ELMER SMITH 2	265	COAL	OHIO RIVER	AP	AP ✓ <i>Combine</i>
		PARADISE 1&2	1408	COAL	GREEN RIVER	NR	RV ✓ <i>Combine</i>
		PARADISE 3	1150	COAL	GREEN RIVER	NR	RV ✓ <i>Combine</i>
	MISSISSIPPI POWER & LIGHT	SHAWNEE 1-10	1750	COAL	OHIO RIVER	NR	RV ✓
		GRAND GULF 1	1250	NUCLEAR BWR	MISSISSIPPI RIVER	NA	NR ✓

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		GRAND GULF 2	1250	NUCLEAR BWR	MISSISSIPPI RIVER	NA	NR ✓
	MISSISSIPPI POWER CO	JACK WATSON 1-4	596	COAL	BILOXI RIVER INT ONLY	RV	RV ✓
		JACK WATSON 5	578	COAL	BILOXI RIVER INT ONLY	RV	RV ✓
	TENNESSEE VALLEY AUTH	YELLOW CREEK 1	1407	NUCLEAR PWR	PICKWICK LAKE	AP	PR ✓ SR
		YELLOW CREEK 2	1407	NUCLEAR PWR	PICKWICK LAKE	AP	PR ✓ SR
		ASHEVILLE 1&2	393	COAL	FRENCH BROAD RIVER	ND	ND ✓
	CAROLINA POWER & LIGHT CO	BRUNSWICK 1	821	NUCLEAR BWR	CAPE FEAR RIVER INT ONLY	NR	HA ✓
		BRUNSWICK 2	821	NUCLEAR BWR	CAPE FEAR RIVER INT ONLY	NR	HA ✓
		CAPE FEAR 1&3	46	COAL-OIL	CAPE FEAR RIVER	NR	PR ✓
		CAPE FEAR 5&6	329	COAL	CAPE FEAR RIVER	NA	PR ✓
		LEE 1-3	402	COAL-OIL	NEUSE RIVER	NA	PR ✓
		MAYO 1	736	COAL	HYCO RIVER	NA	ND ✓
		MAYO 2	736	COAL	HYCO RIVER	NA	ND ✓
		ROXBORO 1-3	1813	COAL-OIL	HYCO RIVER	ND	ND ✓
		ROXBORO 4	745	COAL-OIL	HYCO RIVER	NA	ND ✓
		SHEARON HARRIS 1	900	NUCLEAR PWR	BUCKHORN CREEK	NA	ND ✓
		SHEARON HARRIS 2	900	NUCLEAR PWR	BUCKHORN CREEK	NA	ND ✓
		SHEARON HARRIS 3	900	NUCLEAR PWR	BUCKHORN CREEK	NA	ND ✓
		SHEARON HARRIS 4	900	NUCLEAR PWR	BUCKHORN CREEK	NA	ND ✓
		ALLEN 1-5	1155	COAL	LAKE WYLIE	AP	NR ✓
	DUKE POWER CO	CLIFFSIDE 5	571	COAL	BROAD RIVER	NA	NR ✓
		MARSHALL 1-4	2000	COAL-OIL	LAKE NORMAN	AP	AP ✓
		RIVERBEND 1-7 (NC)	631	COAL	MOUNTAIN ISLAND LAKE	AP	NR ✓
		THOMAS PERKINS 1	1280	NUCLEAR PWR	YADKIN RIVER	NA	ND
		THOMAS PERKINS 2	1280	NUCLEAR PWR	YADKIN RIVER	NA	ND

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STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316R
SC	CAPOLINA POWER & LIGHT CO	THOMAS PERKINS 3	1280	NUCLEAR PWR	YADKIN RIVER	NA	ND ✓
		W.B. MCGUIRE 1	1180	NUCLEAR PWR	LAKE NORMAN	ND	ND PR ✓
		W.B. MCGUIRE 2	1180	NUCLEAR PWR	LAKE NORMAN	ND	ND PR ✓
		H.B. ROBINSON 1	190	COAL	LAKE ROBINSON	AP	AP ✓
	DUKE POWER CO	H.B. ROBINSON 2	712	NUCLEAR PWR	LAKE ROBINSON	AP	AP ✓
		LEE 1-3 (SC)	355	COAL	SALUDA RIVER	AP	AP ✓
		OCONEE 1	887	NUCLEAR PWR	LAKE KEOWEE	NR	AP ✓
		OCONEE 2	887	NUCLEAR PWR	LAKE KEOWEE	NR	AP ✓
	SOUTH CAROLINA ELEC & GAS	OCONEE 3	887	NUCLEAR PWR	LAKE KEOWEE	NR	AP ✓
		AM WILLIAMS 1	580	OIL	BACK RIVER INT ONLY	RV	RV ✓
		CANADYS 1-3	422	COAL-OIL-GAS	EDISTO RIVER	RV	RV ✓
		HAGOOD 1-3	98	OIL-GAS	ASHLEY RIVER	NR	RV ✓ AP 4/5/78
	SOUTH CAROLINA PUBLIC SER	URQUHART 1-3	250	COAL-GAS	SAVANNAH RIVER	NR	RV ✓ AP 4/5/78
		VC SUMMER 1	900	NUCLEAR PWR	MONTICELLO RESERVOIR	AP	PR ✓ SR
TN	TENNESSEE VALLEY AUTH	WATEREE 1&2	772	COAL-OIL	WATEREE RIVER	RV	RV AP 4/5/78
		GRAINGER 1&2	164	COAL	WACCAMAW RIVER	NR	RV ✓
		JEFFERIES 1-4	446	COAL-OIL	COOPER RIVER	NR	RV ✓
		WINYAH 1	315	COAL	TURKEY CREEK	NA	RV ✓
		WINYAH 2	315	COAL	TURKEY CREEK	NA	RV ✓
		WINYAH 3	315	COAL	TURKEY CREEK	NA	ND ✓
		WINYAH 4	315	COAL	TURKEY CREEK	NA	ND ✓
		BULL RUN 1	950	COAL	MELTON HILL RESERVOIR	AP	AP ✓
		CUMBERLAND 1&2	2600	COAL	BARKLEY RESERVOIR	RV	RV AP ✓
		GALLATIN 1-4	1256		OLD HICKORY RESERVOIR	RV	RV CA ✓
	HARTSVILLE AI		1233	NUCLEAR BWR	OLD HICKORY RESERVOIR	NA	ND ✓

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STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		HARTSVILLE A2	1233	NUCLEAR BWR	OLD HICKORY RESERVOIR	NA	ND ✓
		HARTSVILLE B1	1233	NUCLEAR BWR	OLD HICKORY RESERVOIR	NA	ND ✓
		HARTSVILLE B2	1233	NUCLEAR PWR	OLD HICKORY RESERVOIR	NA	ND ✓
		JOHN SEVIER 1-4	823	COAL	JOHN SEVIER RESERVOIR	RV	RV ✓
		JOHNSONVILLE 1-10	1486	COAL	KENTUCKY RESERVOIR	AP	AP ✓
		KINGSTON 1-9	1697	COAL	WATTS BAR RESERVOIR	AP	AP ✓
		PHIPPS BEND 1	1233	NUCLEAR BWR	HOLSTON RIVER	NA	PR ✓ <i>SR</i>
		PHIPPS BEND 2	1233	NUCLEAR BWR	HOLSTON RIVER	NA	PR ✓ <i>SR</i>
		SEQUOYAH 1	1148	NUCLEAR PWR	CHICKAMAUGA RESERVOIR	ND	ND ✓
		SEQUOYAH 2	1148	NUCLEAR PWR	CHICKAMAUGA RESERVOIR	ND	ND ✓
		TH ALLEN 1-3	996	COAL-GAS	WICKELLAR LAKE	NR	RV ✓
		WATTS BAR 1	1177	NUCLEAR PWR	CHICKAMAUGA RESERVOIR	AP <i>ND</i>	ND <i>SR</i>
		WATTS BAR 1-4	240	COAL	WATTS BAR RESERVOIR	NR	AP ✓
		WATTS BAR 2	1177	NUCLEAR PWR	CHICKAMAUGA RESERVOIR	AV <i>ND</i>	ND <i>SR</i>

REGION V					316A	316B
STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	
IL	CEN ILLINOIS PUBLIC SER	COFFEEN 1&2	1005	COAL	LAKE COFFEEN	HA ⁴ HA ⁴
		GRAND TOWER 3&4	183	COAL	MISSISSIPPI RIVER	NR RV
		HUTSONVILLE 1-4	212	COAL	WABASH RIVER	NR RV
		MEREDOSIA 1-3	355	COAL	ILLINOIS RIVER	NR RV
		MEREDOSIA 4	200	OIL	ILLINOIS RIVER	NR RV
		NEWTON 1	600	COAL	NEWTON LAKE	PR PR
		NEWTON 2	550	COAL	NEWTON LAKE	PR PR
		DUCK CREEK 1	400	COAL-OIL	DUCK CREEK	HI HI
	CENTRAL ILLINOIS LIGHT CO	DUCK CREEK 2	400	COAL	DUCK CREEK	HI HI
		ED EDWARDS 1-3	780	COAL-OIL	ILLINOIS RIVER	NR PR
		RS WALLACE 3-7	305	COAL-GAS	ILLINOIS RIVER	NR PR
		BRAIDWOOD 1	1120	NUCLEAR PWR	KANKAKEE RIVER	NR RV
	COMMONWEALTH EDISON CO	BRAIDWOOD 2	1120	NUCLEAR PWR	KANKAKEE RIVER	NR RV
		BYRON 1	1120	NUCLEAR PWR	ROCK RIVER	NA RV
		BYRON 2	1120	NUCLEAR PWR	ROCK RIVER	NA RV
		CARROLL COUNTY 1	1120	NUCLEAR LWR	MISSISSIPPI RIVER	NA NR
		CARROLL COUNTY 2	1120	NUCLEAR LWR	MISSISSIPPI RIVER	NA NR
		COLLINS 1&4	1000	OIL	ILLINOIS RIVER	NA RV
		COLLINS 2&3	1000	OIL	ILLINOIS RIVER	NA RV
		COLLINS 5	500	OIL	ILLINOIS RIVER	NA RV
		DIXON 4&5	119	COAL-GAS	ROCK RIVER	NR AP
		DRESDEN 1	200	NUCLEAR BWR	KANKAKEE RIVER INT ONLY	NR RV
		FISK	547	COAL-GAS	CHICAGO CANAL	NR ND
		JOLIET	1787	COAL-GAS	DES PLAINES RIVER	NR PR ⁵
		KINCAID 1&2	1320	COAL-OIL	LAKE SANGCHRIS	AP PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		LA SALLE 1	1078	NUCLEAR BWR	ILLINOIS RIVER	NA	RV
		LA SALLE 2	1078	NUCLEAR BWR	ILLINOIS RIVER	NA	RV
		QUAD CITIES 1	789	NUCLEAR BWR	MISSISSIPPI RIVER	RD	RD
		QUAD CITIES 2	789	NUCLEAR BWR	MISSISSIPPI RIVER	RD	RD
		WAUKEGAN 5-8	932	COAL-GAS	LAKE MICHIGAN	CA	AP
		WILL COUNTY 1-4	1259	COAL	CHICAGO CANAL	NR	PR 5
		ZION 1	1040	NUCLEAR PWR	LAKE MICHIGAN	AP	RV
		ZION 2	1040	NUCLEAR PWR	LAKE MICHIGAN	AP	RV
	ELEC ENERGY INC	JOPPA STEAM 1-6	1098	COAL	OHIO RIVER	AP	AM
	ILLINOIS POWER CO	BALDWIN 1-3	1893	COAL-OIL	KASKASKIA RIVER	NA	NR
		CLINTON 1	933	NUCLEAR BWR	SALT CREEK	AP	PR
		CLINTON 2	933	NUCLEAR BWR	SALT CREEK	AP	PR
		HAVANA 1-5	230	OIL	ILLINOIS RIVER	NR	RV
		HAVANA 6	450	COAL	ILLINOIS RIVER	NA	NR
		HENNEPIN 1&2	306	COAL-GAS	ILLINOIS RIVER	NR	RV
		VERMILION 1&2	183	COAL	RESERVOIR	NR	RV
		WOOD RIVER 1-5	651	GAS-OIL-COAL	MISSISSIPPI RIVER	NR	RV
	IOWA ILLINOIS GAS & ELEC	MOLINE 5-8	119	GAS-OIL	MISSISSIPPI RIVER	NR	RV
	MT CARMEL PUB UTILITIES	MOUNT CARMEL 1-4	22	COAL-OIL	WABASH RIVER	NR	PR
	PERU LIGHT DEPT	PERU 1-4 (IL)	16	COAL-GAS	ILLINOIS RIVER	NR	PR
	SOUTH ILLINOIS POWER COOP	MARION 1-3	99	COAL	LITTLE SALINE RIVER	PR	PR
		MARION 4	173	COAL	LITTLE SALINE RIVER	PR	PR
	SPRINGFIELD WTR LT & PWR	LAKE SIDE 1-7	156	COAL-OIL	LAKE SPRINGFIELD	AP	PR
	UNION ELEC CO	VENICE NO TWO 1-6	474	COAL-OIL-GAS	MISSISSIPPI RIVER	NR	RV
	WESTERN ILLINOIS PWR COOP	PEARL 1	22	COAL	ILLINOIS RIVER	NR	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
IN	WINNETKA ELEC DEPT	WINNETKA 4-7	26	COAL-GAS	LAKE MICHIGAN	NR	AP
	ALCOA GEN CORP	WARRICK 1-4	731	COAL-GAS	OHIO RIVER	AP	RV
	COMMONWEALTH EDISON CO	STATE LINE 1-4	972	COAL-GAS	LAKE MICHIGAN	AP	RV
	HOOSTER ENERGY DIVISION	MEROM 1	490	COAL	WABASH RIVER	DR	RV
		MEROM 2	490	COAL	WABASH RIVER	DR	RV
		RATTS 1&2	232	COAL	WHITE RIVER	CA	RV
	INDIANA KENTUCKY ELEC COR	CLIFTY CREEK 1-6	1350	COAL	OHIO RIVER	AP	PR
	INDIANA MICHIGAN ELEC CO	BREED 1&2	496	COAL-OIL	WABASH RIVER	CA	PR
		TANNERS CREEK 1-4	1101	COAL-OIL	OHIO RIVER	AP	PR
		TWIN BRANCH 3-5	315	OIL	ST JOSEPH RIVER	AP	NR
	INDIANAPOLIS POWER & LT	EW STOUT 1-6	476	COAL-OIL	WHITE RIVER	CA	5
		HT PRITCHARD 1-5	280	COAL-OIL	WHITE RIVER	CA	AP
		HT PRITCHARD 6	114	COAL-OIL	WHITE RIVER	CA	AP
		PERRY 3-7	60	COAL-OIL	WHITE RIVER	NR	NR
		PETERSBURG 1&2	724	COAL	WHITE RIVER	CA	RV
	NO INDIANA PUBLIC SER	BAILLY 7&8	616	COAL-GAS	LAKE MICHIGAN	CA	RV
		BAILLY NUCLEAR 1	645	NUCLEAR BWR	LAKE MICHIGAN	NA	NR
		DEAN H MITCHELL	529	COAL-GAS	LAKE MICHIGAN	RV	RV
		MICHIGAN CITY 1-3	211	COAL-GAS	LAKE MICHIGAN	PR	PR
		MICHIGAN CITY 12	468	COAL-GAS	LAKE MICHIGAN	PR	PR
		RM SCHAFER	520	COAL	KANKAKEE RIVER	NA	PR
		RM SCHAFER 15	556	COAL	KANKAKEE RIVER	NA	PR
	PUBLIC SERVICE OF INDIANA	CAYUGA 1&2	1062	COAL-OIL	WABASH RIVER	RD	RV
		EDWARDSPORT 6-8	144	COAL	WHITE RIVER	CA	AP
		MARBLE HILL 1	1130	NUCLEAR PWR	OHIO RIVER	NA	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
MI	SOUTHERN INDIANA GAS ELEC CONSUMERS POWER CO	MARBLE HILL 2	1130	NUCLEAR PWR	OHIO RIVER	NA	PR
		NOBLESVILLE 1&2	100	COAL-OIL	WHITE RIVER	CA	PR
		RH GALLAGHER 1-4	300	COAL-OIL	OHIO RIVER	AP	RV
		WABASH RIVER 1-6	964	COAL-OIL	WABASH RIVER	RD	RV
		CULLEY 1-3	419	COAL-OIL-GAS	OHIO RIVER	AP	RV
		BC COBB 1-5	510	COAL-OIL	LAKE MUSKEGON INT ONLY	NR	DR
		BE MORROW 1-4	186	OIL	KALAMAZOO RIVER	RV	RV
		BIG ROCK PT 2	72	NUCLEAR BWR	LAKE WICHIGAN	NR	AP
		DE KARN 1&2	530	COAL-OIL	SAGINAW RIVER	RV	DR
		DE KARN 3	605	OIL	SAGINAW RIVER	NA	DR
	DETROIT EDISON CO	DE KARN 4	632	OIL	LAKE HURON	NA	DR
		JC WEADOCK 1-8	623	OIL-COAL	SAGINAW RIVER	RV	DR
		JH CAMPBELL 1&2	652	COAL	PIGEON LAKE INT ONLY	NR	AP
		JH CAMPBELL 3	800	COAL	PIGEON LAKE	ND	ND
		JR WHITING 1-3	325	COAL	LAKE ERIE	NR	DR
		MIDLAND 1	460	NUCLEAR PWR	TITTABAWASSEE RIVER	PR	PR
		MIDLAND 2	811	NUCLEAR PWR	TITTABAWASSEE RIVER	PR	PR
		PALISADES 1	668	NUCLEAR BWR	LAKE MICHIGAN	NA	AP
		CONNERS CREEK	460	OIL-GAS-COAL	DETROIT RIVER	NR	RV
		DELRAY 11-16	375	OIL-GAS	DETROIT RIVER	NR	RV
		ENRICO FERMI 1	161	OIL	LAKE ERIE	NR	DR
		ENRICO FERMI 2	1093	NUCLEAR BWR	LAKE ERIE	NA	AP
		HARBOR BEACH 1	110	COAL-OIL	LAKE HURON	NR	AP
		MARYSVILLE (MI)	200	COAL-GAS	ST CLAIR RIVER	NR	AP
		MONROE 1-3	2423	COAL-OIL	RAISIN RIVER INT ONLY	AP	RV

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		MONROE 4	750	COAL-OIL	RAISIN RIVER INT ONLY	AP	RV
		PENNSALT 11-18	39	COAL-OIL	DETROIT RIVER	NR	PR
		RIVER ROUGE 1-3	924	COAL-OIL-GAS	DETROIT RIVER	NR	AP
		ST CLAIR 1-7	1739	COAL-OIL-GAS	ST CLAIR RIVER	NR	RV
		TRENTON CHANNEL	740	COAL-GAS-OIL	DETROIT RIVER	NR	AP
		WYANDOTTE NORTH	59	COAL-OIL	DETROIT RIVER	NR	AP
		WYANDOTTE SOUTH 1-5	19	COAL	DETROIT RIVER	NR	PR
		MISTERSKY 1-6	175	COAL-OIL	DETROIT RIVER	NR	PR
		MISTERSKY 7	60	OIL	DETROIT RIVER	NR	PR
		POWER HOUSE ONE 1-7	345	COAL-GAS	RIVER ROUGE	AP	NR
		GLADSTONE 1&2	6	COAL	ESCANABA BAY	NR	PS
		JAMES DEYOUNG 3-6	83	COAL-GAS-OIL	BLACK RIVER	NR	AP
		DC COOK 1	1054	NUCLEAR PWR	LAKE MICHIGAN	AP	RV
		DC COOK 2	1060	NUCLEAR PWR	LAKE MICHIGAN	AP	RV
		ECKERT STATION 1-6	375	COAL	GRAND RIVER	AP	AP
		ERICKSON 1	160	COAL	GRAND RIVER	NA	AP
		ERICKSON 2	160	COAL	GRAND RIVER	ND	ND
		OTTAWA ST 1-5	82	COAL	GRAND RIVER	AP	AP
		SHIRAS 1&2	36	COAL-GAS	LAKE SUPERIOR	NR	PR
		SHIRAS 3	43	COAL	LAKE SUPERIOR	NR	ND
		ADVANCE 1-3	41	COAL	LAKE CHARLEVOIX	NR	AP
		BAYSIDE 1-4	36	COAL-GAS	LAKE MICHIGAN	NR	RV
		PRESQUE ISLE 1-4	175	COAL-OIL	LAKE SUPERIOR	AP	AP
		PRESQUE ISLE 5&6	160	COAL	LAKE SUPERIOR	AP	AP
		PRESQUE ISLE 7&8	160	COAL	LAKE SUPERIOR	ND	AP

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
MN	UPPER PENINSULA POWER CO	PRESQUE ISLE 9	80	COAL	LAKE SUPERIOR	ND	AP
		ESCANABA 1&2	29	COAL	LAKE MICHIGAN	NR	PR
		JH WARDEN 1	18	COAL	LAKE SUPERIOR	PR	PR
	WOLVERINE ELEC COOP	VAN DYKE 6	23	OIL-GAS	LITTLE RABBIT RIVER	NA	AP
		WYANDOTTE 2-5&7	50	GAS-OIL	DETROIT RIVER	NR	PR
	INTERSTATE POWER CO	FOX LAKE 1-3	106	OIL-GAS-COAL	FOX LAKE	PR	AP
		CLAY BOSWELL 1&2	150	COAL-OIL	BLACKWATER LAKE INT ONLY	RV	RV
	MINNESOTA POWER & LIGHT	CLAY BOSWELL 3	365	COAL-OIL	BLACKWATER LAKE INT ONLY	RV	RV
		CLAY BOSWELL 4	555	COAL	MISSISSIPPI RIVER	NA	NR
		FINELAKES 1	800	COAL	ST LOUIS RIVER	NA	PR
	NORTHERN STATES POWER CO	ML HIBBARD 1-4	123	OIL-GAS	ST LOUIS RIVER	NR	AP
		SYL LASKIN 1&2	116	COAL-OIL	COLBY LAKE INT ONLY	RV	RV
		ALAN S KING 1	598	COAL	ST CROIX RIVER	AP	PR
		BLACK DOG 1-4	488	COAL-GAS-OIL	MINNESOTA RIVER	PR	PR
		HIGH BRIDGE 3-6	398	COAL-OIL-GAS	MISSISSIPPI RIVER	NR	CA
		MINNESOTA VALLEY 3	46	COAL-GAS-OIL	MINNESOTA RIVER	RV	CA
		MONTICELLO 1	545	NUCLEAR BWR	MISSISSIPPI RIVER	RV	RV
		PRAIRIE ISLAND 1	530	NUCLEAR PWR	MISSISSIPPI RIVER	RD	RV
		PRAIRIE ISLAND 2	530	NUCLEAR PWR	MISSISSIPPI RIVER	RD	RV
		RED WING 1&2	24	LIGNITE-GAS	MISSISSIPPI RIVER	NR	AP
	OTTER TAIL POWER CO	RIVERSIDE (MN)	384	COAL-OIL-GAS	MISSISSIPPI RIVER	AP	RV
		SHERBURNE COUNTY 1&2	1440	COAL-OIL	MISSISSIPPI RIVER	NA	CA
		SHERBURNE COUNTY 3	860	COAL-OIL	MISSISSIPPI RIVER	NA	PR
		SHERBURNE COUNTY 4	860	COAL-OIL	MISSISSIPPI RIVER	NA	PR
		WILMARTH 1&2	26	COAL-GAS	MINNESOTA RIVER	RV	CA
		BIG STONE	15	COAL	BIG STONE LAKE	NR	PR
		HOOT LAKE 1-3	137	LIGNITE-OIL	OTTER TAIL RIVER	NA	CA

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316
OH	CARDINAL OPERATING CO	CARDINAL 1&2	1180	COAL-OIL	OHIO RIVER	AP	PR
	CINCINNATI GAS & ELEC CO	MIAMI FORT 3-6	393	COAL-OIL	OHIO RIVER	AP	PR
		WC BECKJORD 6	461	COAL-OIL	OHIO RIVER	AP	PR
		WH ZIMMER 1	810	NUCLEAR BWR	OHIO RIVER	NA	NR
		WH ZIMMER 2	1150	NUCLEAR BWR	OHIO RIVER	NA	NR
	CLEVELAND ELEC ILLUM CO	ASHTABULA 1-9	668	COAL-OIL	LAKE ERIE	RV	PR
		AVON LAKE 1-9	1275	COAL-OIL	LAKE ERIE	RV	PR
		EASTLAKE 1-4	507	COAL-OIL	LAKE ERIE	DR	PR
		EASTLAKE 5	650	COAL-OIL	LAKE ERIE	DR	PR
		LAKE SHORE 14-18	514	COAL-OIL	LAKE ERIE	RV	PR
		LAKE ROAD 8-11	160	COAL-OIL	LAKE ERIE	NR	PR
	CLEVELAND PUR UTIL DEPT	CONESVILLE 1-3	434	COAL-OIL	MUSKINGUM RIVER	RV	PR
	COLUMBUS & SO OHIO ELEC	CONESVILLE 4	800	COAL-OIL	MUSKINGUM RIVER	NA	PR
		CONESVILLE 5	403	COAL-OIL	MUSKINGUM RIVER	NA	PR
		CONESVILLE 6	403	COAL-OIL	MUSKINGUM RIVER	NA	PR
		PICWAY 3-5	171	COAL-OIL	SCIOTO RIVER	RV 6	NR
	DAYTON POWER & LIGHT CO	FM TAIT 1-3/7&8	452	COAL-OIL-GAS	GREAT MIAMI RIVER	RV	PR
		HUTCHINGS 1-6	414	COAL-GAS	GREAT MIAMI RIVER	RV	PR
		JM STUART 1-3	1830	COAL-OIL	OHIO RIVER INT ONLY	RV	PR
		JM STUART 4	571	COAL-OIL	OHIO RIVER INT ONLY	NA	PR
		TROY 4-6	24	COAL	GREAT MIAMI RIVER	NR	PR
	DOVER MUN LIGHT & PWR	DOVER	33	COAL	TUSCARAWAS RIVER	NR	PR
	HAMILTON DEPT PUBLIC UTIL	HAMILTON 3-8	78	COAL-OIL-GAS	GREAT MIAMI RIVER	PR	PR
	NAPOLEON MUN ELEC UTIL	NAPOLEON	24	COAL		PR	PR
	OHIO EDISON CO	EAST PALESTINE 1-4	16	COAL		NR	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		EDGEWATER 2-4	203	COAL-OIL	LAKE ERIE	RV	PR
		GORGE 6&7	88	COAL-OIL	CUYAHOGA RIVER	RV	PR
		MAD RIVER 1-3	75	COAL-OIL	MAD RIVER	RV	PR
		NILES 1&2	250	COAL-OIL	MAHONING RIVER	NA	ND
		NORWALK 1-5	32	COAL-OIL	NORWALK CREEK	PR	PR
		RE BURGER 1-5	546	COAL-OIL	OHIO RIVER	AP	PR
		TORONTO 5-7	176	COAL-OIL	OHIO RIVER	AP	PR
		WH SAMMIS 1-6	1681	COAL-OIL	OHIO RIVER	RV	PR
		WH SAMMIS 7	680	COAL-OIL	OHIO RIVER	RV	PR
	OHIO ELEC CO	GENERAL JM GAVIN 1&2	2600	COAL-OIL	OHIO RIVER	NA	AP
	OHIO POWER CO	WOODCOCK 1-5	38	COAL	NATIONAL QUARRY	NA	NR
	OHIO VALLEY ELEC CORP	KYGER CREEK 1-5	1085	COAL	OHIO RIVER	AP	PR
	PAINESVILLE LIGHT & POWER	PAINESVILLE 1-6	38	COAL-OIL		PR	PR
	PIQUA MUN POWER SYSTEM	PIQUA 1-7	56	COAL	GREAT MIAMI RIVER	ND	ND
	SHELBY MUN UTILITIES	SHELBY 1-4	40	COAL-GAS		PR	PR
	ST MARYS MUN LT & POWER	SAINT MARYS 2-6	20	COAL-OIL	ST MARYS RIVER	PR	PR
	TOLEDO EDISON CO	ACME (OH)	315	COAL-OIL-GAS	WAUMEE RIVER	RV	PR
		BAY SHORE 1-4	648	COAL-OIL	WAUMEE BAY	RV	PR
		DAVIS BESSE 1	906	NUCLEAR PWR	LAKE ERIE	NR	PR
		WATER STREET	10	OIL-GAS	WAUMEE RIVER	PR	PR
	UNION CARBIDE CORP	MARIETTA STATION	160		OHIO RIVER	PR	PR
	DAIRYLAND POWER COOP	ALMA 1-5	190	COAL	MISSISSIPPI RIVER	NR	RV
		ALMA 6	350	COAL	MISSISSIPPI RIVER	AP	CA
		EJ STONEMAN 1&2	52	COAL	MISSISSIPPI RIVER	NR	AP
		GENOA 2	50	NUCLEAR BWR	MISSISSIPPI RIVER	YU	AP

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
	LAKE SUPERIOR DIST POWER	BAY FRONT 1-6	82	COAL-GAS-OIL	LAKE SUPERIOR	NR	AP
	MADISON GAS & ELEC CO	BLOUNT STREET 1-7	193	COAL-OIL-GAS	LAKE MONONA	NR	AP
	MANITOWOC PUBLIC UTIL	MANITOWOC 3-6	70	COAL	LAKE MICHIGAN	NR	AP
	MENASHA ELEC & WATER UTIL	MENASHA 1-4	30	COAL	FOX RIVER	NR	AP
	NORTHERN STATES POWER CO	FRENCH ISLAND 1&2	23	OIL-GAS	MISSISSIPPI RIVER	NR	AP
		TYRONE 1	1150	NUCLEAR PWR	CHIPPewa RIVER	NA	PR
	SUPERIOR WTR LT & POWER	WINSLOW	28	OIL-GAS	LAKE SUPERIOR	NR	RV
	WISCONSIN ELEC POWER CO	COMMERCE STREET	35	OIL-GAS	MILWAUKEE RIVER	NR	AP
		HAVEN 1	900	NUCLEAR PWR	LAKE MICHIGAN	PR	PR
		HAVEN 2	900	NUCLEAR PWR	LAKE MICHIGAN	PR	PR
		LAKESIDE (WI)	310	OIL	LAKE MICHIGAN	AP	AP
		OAK CREEK 1-8	1692	COAL-OIL	LAKE MICHIGAN	AP	AP
		OZAUKEE	0		LAKE MICHIGAN	NA	PR
		PLEASANT PRAIRIE 1	617	COAL	LAKE MICHIGAN	NA	CA
		PLEASANT PRAIRIE 2	617	COAL	LAKE MICHIGAN	NA	CA
		POINT BEACH 1	497	NUCLEAR PWR	LAKE MICHIGAN	AP	AP
		POINT BEACH 2	497	NUCLEAR PWR	LAKE MICHIGAN	AP	AP
		PORT WASHINGTON 1-5	400	COAL	LAKE MICHIGAN	NR	AP
		VALLEY 1&2	272	COAL-GAS	WENOMONEE RIVER	NR	AP
	WISCONSIN POWER & LIGHT	BLACKHAWK 3&4	50	COAL-GAS	ROCK RIVER	NR	AP
		COLUMBIA 1 (WI)	511	COAL-OIL	WISCONSIN RIVER	NA	AP
		COLUMBIA 2 (WI)	512	COAL-OIL	WISCONSIN RIVER	NA	AP
		EDGEWATER 1-3	129	COAL-OIL	LAKE MICHIGAN	RV	AP
		EDGEWATER 4	351	COAL-OIL	LAKE MICHIGAN	RV	AP
		EDGEWATER 5	400	COAL	LAKE MICHIGAN	PR	PR
		NELSON DEWEY 1-2	228	COAL	MISSISSIPPI RIVER	NR	AP

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
		ROCK RIVER 1&2	150	COAL	ROCK RIVER	RV	AP
	WISCONSIN PUBLIC SER CO	JP PULLIAM 1-8	393	COAL-OIL-GAS	FOX RIVER GREEN BAY	RV	RV
		KEWAUNEE 1	535	NUCLEAR PWR	LAKE MICHIGAN	AP	AP
		WESTON 1&2	135	COAL-GAS	WISCONSIN RIVER	RV	AP
		WESTON 3	350	COAL	WISCONSIN RIVER	NA	RV

		REGION VI					
STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
LA	GULF STATES UTILITIES	WILLOW GLEN 1-4	1586	GAS-OIL	MISSISSIPPI RIVER	CA	AP
		WILLOW GLEN 5	580	OIL	MISSISSIPPI RIVER	CA	AP
	LOUISIANA POWER & LIGHT	NINE MILE POINT 1-5	1918	GAS-OIL	MISSISSIPPI RIVER	PR	PR
		WATERFORD 3	1113	NUCLEAR PWR	MISSISSIPPI RIVER	PR	PR
TX	CENTRAL POWER & LIGHT CO	COLETO CREEK 1	550	COAL	COLETO CREEK RESERVOIR	RV	AP
		COLETO CREEK 2	550	COAL	COLETO CREEK RESERVOIR	RV	AP
	HOUSTON LIGHTING & POWER	CEDAR BAYOU 1&2	1530	GAS	CEDAR BAYOU INT ONLY	PR	PR
		CEDAR BAYOU 3	750	OIL-GAS	CEDAR BAYOU INT ONLY	PR	PR
	TEXAS MUN POWER POOL	PH ROBINSON 1-4	2316	GAS	DICKINSON BAY	PR	PR
		GIBBONS CREEK	460	COAL-LIGNITE	GIBBONS CREEK RESERVOIR	CA	AP

REGION VII

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
IA	INTERSTATE POWER CO	LANSING 1-3	65	COAL	MISSISSIPPI RIVER	AP	PR
		LANSING 4	260	COAL	MISSISSIPPI RIVER	AP	PR
	IOWA ILLINOIS GAS & ELEC	RIVERSIDE (IOWA)	223	COAL-GAS	MISSISSIPPI RIVER	NR	AP
		COUNCIL BLUFFS 1&2	131	COAL-GAS	MISSOURI RIVER	NR	AP
	IOWA POWER & LIGHT CO	COUNCIL BLUFFS 3	650	COAL	MISSOURI RIVER	AP	PR
		DES MOINES 10&11	189	COAL-GAS	DES MOINES RIVER	NR	RV
	IOWA PUBLIC SERVICE CO	DES MOINES 6&9	81	OIL-GAS	DES MOINES RIVER	NR	RV
		GEORGE NEAL 1&2	496	COAL	MISSOURI RIVER	NR	RV
		GEORGE NEAL 3	550	COAL	MISSOURI RIVER	AP	RV
		GEORGE NEAL 4	585	COAL	MISSOURI RIVER	AP	PR
KS	KANSAS CITY BD PUB UTIL	NEARMAN CREEK 1	250	COAL	MISSOURI RIVER	AP	PR
		NEW MADRID 1	600	COAL	MISSISSIPPI RIVER	AP	CA
MO	ASSOCIATED ELEC COOP	NEW MADRID 2	600	COAL	MISSISSIPPI RIVER	AP	CA
		THOMAS HILL 3	600	COAL	THOMAS HILL RESERVOIR	PR	PR
	KANSAS CITY POWER & LIGHT	IATAN 1	630	COAL	MISSOURI RIVER	AP	PR
		LABADIE 1-4	2428	COAL	MISSOURI RIVER	AP	AP
	UNION ELEC CO	RUSH ISLAND 1	555	COAL	MISSISSIPPI RIVER	PR	PR
		RUSH ISLAND 2	575	COAL	MISSISSIPPI RIVER	PR	PR
	NEBRASKA PUBLIC POWER DIS	COOPER 1	778		MISSOURI RIVER	AP	AP
		GERALD GENTLEMAN 1	600	COAL	NO PLATTE RIVER INT ONLY	AP	AP
	OMAHA PUBLIC POWER DIST	GERALD GENTLEMAN 2	600	COAL	NO PLATTE RIVER INT ONLY	PR	PR
		FORT CALHOUN 2	1150	NUCLEAR PWR	MISSOURI RIVER	RV	RV
		NEBRASKA CITY 1	575	COAL	MISSOURI RIVER	AP	AP

REGION VIII

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
ND	BASIN ELEC POWER COOP	LELAND OLDS 1	150	COAL	MISSOURI RIVER	PR	PR
		LELAND OLDS 2	460	COAL	MISSOURI RIVER	PR	PR
UT	UTAH POWER & LIGHT CO	CARBON 1&2	189	COAL	PRICE RIVER	NR	NR
		GADSBY 1-3	252	COAL-OIL-GAS	JORDAN RIVER	NR	NR
		HALE 1&2	60	COAL-GAS	PROVO RIVER	RV	RV
WY	PACIFIC POWER & LIGHT	DAVE JOHNSTON 1-3	458	COAL-OIL	NORTH PLATTE RIVER	AP	AP
		DAVE JOHNSTON 4	330	COAL-OIL	NORTH PLATTE RIVER	AP	AP

REGION IX

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
CA	GLENDAL PUB SERVICE DEPT	GRAYSON 1-5	164	OIL-GAS	WELL	NA	NR
	LOS ANGELES DEPT WTR PWR	HARBOR 1-5	388	OIL-GAS	PACIFIC OCEAN	NR	PR
		HAYNES 1-6	1606	OIL-GAS	LONG BEACH MARINA INT ONL	NR	PR
		SCATTERGOOD 1&2	326	OIL-GAS	PACIFIC OCEAN	NR	PR
	PACIFIC GAS & ELEC CO	AVON 1	40	OIL-GAS	SUISUN BAY	NA	PR
		CONTRA COSTA 1-5	559	OIL-GAS	SAN JOAQUIN RIVER	DR	PR
		CONTRA COSTA 6&7	718	OIL-GAS	SAN JOAQUIN RIVER	DR	PR
		DIABLO CANYON 1	1084	NUCLEAR PWR	PACIFIC OCEAN	PR	PR
		DIABLO CANYON 2	1084	NUCLEAR PWR	PACIFIC OCEAN	PR	PR
		HUMBOLDT 1&2	102	OIL-GAS	HUMBOLDT BAY	NR	NR
		HUMBOLDT 3	63	NUCLEAR BWR	HUMBOLDT BAY	NR	NR
		HUNTERS POINT 2-4	372	OIL-GAS	SAN FRANCISCO BAY	NR	PR
		MARTINEZ 1	40	OIL-GAS	SUISUN BAY	NA	NR
		MORRO BAY 1-4	1056	OIL-GAS	MORRO BAY	NR	PR
		MOSS LANDING 1-5	553	OIL-GAS	MONTEREY BAY	DR	PR
		MOSS LANDING 6&7	1624	OIL-GAS	MONTEREY BAY	NR	PR
		OLEUM 1&2	80	OIL-GAS	SAN PABLO BAY	NR	PR
		PITTSBURG 1-6	1276	OIL-GAS	SUISUN BAY	DR	PR
		PITTSBURG 7	751	OIL-GAS	SUISUN BAY	NA	PR
		POTRERO 1&2	100	OIL-GAS	SAN FRANCISCO BAY	NR	PR
		POTRERO 3	218	OIL-GAS	SAN FRANCISCO BAY	NR	PR
	SACRAMENTO MUN UTIL DIST	RANCHO SECO 1	963	NUCLEAR PWR	FOLSOM SOUTH CANAL	NA	NR
	SAN DIEGO GAS & ELEC	SOUTH BAY 1-4	714	OIL-GAS	SAN DIEGO BAY	NR	PR
		ENCINA 1-4	617	OIL-GAS	PACIFIC OCEAN	PR	PR
		ENCINA 5	292	OIL-GAS	PACIFIC OCEAN	PR	PR

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
GU	SOUTHERN CALIF EDISON CO	SILVER GATE 1-4	247	OIL-GAS	SAN DIEGO BAY	NR	PR
		STATION B	93	OIL-GAS	SAN DIEGO BAY	NR	PR
		ALAMITOS 1-6	1972	OIL-GAS	LOS CERRITOS CHANNEL INT	NR	PR
		EL SEGUNDO 1-4	996	OIL-GAS	SANTA MONICA BAY	NR	PR
		HIGHGROVE 1-4	170	OIL-GAS	WELL	NA	NR
		HUNTINGTON BEACH 1-4	872		SAN PEDRO CHANNEL	NR	PR
		LONG BEACH 10&11	180	OIL-GAS	LONG BEACH HARBOR	NR	PR
		MANDALAY 1&2	436		SANTA BARBARA CHANNEL	NR	PR
		ORMOND BEACH 1&2	1556	OIL-GAS	PACIFIC OCEAN	AP	PR
		REDONDO BEACH 1-6	589	OIL-GAS	PACIFIC OCEAN	NR	PR
		REDONDO BEACH 7&8	990	OIL-GAS	PACIFIC OCEAN	NR	PR
		SAN BERNARDINO 1&2	130	OIL-GAS	WELL	NA	NR
		SAN ONOFRE 1	430	NUCLEAR PWR	PACIFIC OCEAN	NR	PR
		SAN ONOFRE 2	1100	NUCLEAR PWR	PACIFIC OCEAN	PR	PR
		SAN ONOFRE 3	1100	NUCLEAR PWR	PACIFIC OCEAN	PR	PR
HI	GUAM POWER AUTH	CABRAS	0		PITI CHANNEL	RV	PR
		TANGUISSON	50	OIL	PITI CHANNEL	RV	PR
		PITI	25	OIL	PITI CHANNEL	RV	PR
	US NAVY	PORT ALLEN 52	10	OIL		PR	NR
		PORT ALLEN 53	25	OIL		PR	NR
		HONOLULU 5&7-9	180	OIL	HONOLULU HARBOR	NR	PR
	HAWAIIAN ELEC CO	KAHE 1-4	256	OIL	PACIFIC OCEAN	AP	PR
		KAHE 5	141	OIL	PACIFIC OCEAN	AP	PR
		WAI'AU 1-8	429	OIL	PEARL HARBOR	NR	PR
	HILO ELEC LIGHT CO	SHIPMAN 1-4	24	OIL	WELLS INT ONLY	NR	RV

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
NV	MAUI ELEC CO	KAHULUI 1-5	40	OIL	SALINE WELL	NR	RV
	NEVADA POWER CO	CLARK 1-3	190	OIL-GAS	SEWAGE EFFLUENT	NA	NR
		SUNRISE 1	82	OIL-GAS	SEWAGE EFFLUENT	NA	NR
	SIERRA PACIFIC POWER CO	TRACY 1&2	133	OIL-GAS	TRUCKEE RIVER	DR	PR

REGION X

STATE	OPERATOR	PLANT NAME	MW	FUEL	PRIMARY	316A	316B
AK	CHUGACH ELEC ASSN	KNIK ARM 1-5	15	GAS	SHIP CREEK	PR	ND
	DEPT OF DEFENSE	ELMENDORF AFB	32		SHIP CREEK	RV	ND
	FAIRBANKS UTILITY SYSTEM	FAIRBANKS	15		CHENA RIVER	ND	ND
	GOLDEN VALLEY ELEC ASSN	HEALY 1	22	COAL	NENANA RIVER	AP	ND
WA	WASHINGTON PUB PWR SUPPLY	WPPSS 1	1267	NUCLEAR PWR	COLUMBIA RIVER	NA	ND
		WPPSS 2	1100	NUCLEAR BWR	COLUMBIA RIVER	NA	ND
		WPPSS 4	1267	NUCLEAR PWR	COLUMBIA RIVER	NA	ND

FOOTNOTES

The following is a list of footnotes for this index:

1. Gizzard shad study required.
2. Met-Ed has not made a request for a 316(b) demonstration. Impingement/entrainment studies may be necessary, however, to satisfy requirements of NPDES permit. Studies would be initiated after a closed cycle cooling system becomes operational (July 1979).
3. These plants must satisfy water quality standards for the State of Maryland.
4. Central Illinois Public Service Company has been issued an NPDES permit by Region V, US EPA for Coffeen Generating Facility. This permit would require 316(a) and (b) studies. Central Illinois has requested an adjudicatory hearing on the basis that the waters comprising the cooling lake are privately owned by Central Illinois Public Service Company and are not waters of the state.
5. Postponed due to water quality standards.
6. Demonstration has been approved for 2 units scheduled to close down in 1980. Another operable unit has a 316(a) requirement that is currently under review (RV).
7. A 316(b) demonstration is not required because of the poor quality of water in this portion of the Scioto River. When and if conditions are improved, 316(b) monitoring may be required.

An Update of the
Status of Section 316(a) and (b) Applications

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Background

In February, the U.S. Environmental Protection Agency Water Permits Division, requested the Utility Data Institute (UDI) to provide an update of the status of all steam-electric plant Section 316(a) and (b) applications. Prior to this request the most recent information was published in May 1980--nearly two years ago.

From 1977 until late 1980, the Permits Division relied on information in the Atomic Industrial Forum's POWER Data Base for tracking the status of 316(a) and (b) applications for steam-electric plants. Since then, responsibility for maintaining and updating the POWER Data Base was transferred by industry from the Atomic Industrial Forum to the Edison Electric Institute, which in turn contracted with UDI for data base management services. UDI is a not-for-profit information services company located in Washington, D.C.

UDI's professional staff includes several individuals who created and maintained the POWER Data Base at AIF. Because of the staff's understanding of NPDES issues and past experience with the EPA regional and state environmental staffs, UDI is uniquely qualified to update the status of permit applications for steam-electric plants.

Scope of Work

Under terms of the contract, issued February 1, 1982, UDI was asked to provide the Permits Division with an immediate update of the status of all 316(a) and (b) applications for steam-electric plants. The update covered:

- 1) The number of applications currently pending in each category (both with EPA and with the States);
- 2) The number of final NPDES permits for power plants issued in the last year, aggregated on a state and regional level;
- 3) Major 316(a) and (b) decisions related to power plants (pending and reached in the year 1981); and
- 4) Identification of key issues currently affecting future 316(a) and (b) determinations.

Survey Method

Since less than a month was available for data gathering, UDI

staff decided to undertake an extensive telephone survey rather than using a mailed questionnaire. During a two week period UDI contacted nearly 30 permitting officials in the 10 EPA regions and 15 states. These individuals apprised UDI staff of status changes since publication of the last update. In addition, input from numerous utilities was also used for this update.

Several state printouts and one regional printout were mailed to the permitting official. All were returned prior to this submittal with the exception of Illinois which will be forwarded when it is received. UDI found that a majority of the individuals contacted in previous years were still in place. Most individuals requested a copy of the final 316 status report.

Report Format

In addition to the regional highlights reported below, the data collected are presented in three tables.

Table 1 provides a summary of the current status of all Section 316(a) and (b) steam-electric plant applications nationwide, arranged by EPA region. Reported are the number of applications resolved and demonstrations pending, as well as the number of second round NPDES permits which have been issued to date.

Table 2 presents the application status for each of the 10 EPA regions by compiling the figures for the states within each region.

Table 3 presents for each state and territory a detailed current status of Section 316(a) and (b) applications by identifying all plants involved. Footnotes are used to indicate several unusual situations.

Additional information is included in two attachments.

Attachment A is a glossary of the Section 316(a) and (b) Applications Status Codes used in the tables.

Attachment B is a list of the persons in the EPA Regions and the states who kindly provided the information for this report.

Regional Highlights

Region I

According to Ted Landry, Region I, few additional difficulties are expected with Section 316 demonstrations. There is only one outstanding 316(a) application, and nothing is currently being reviewed at the regional level. There are a number of 316(b) demonstrations still to be resolved. Notable cases include the Millstone and Maine Yankee nuclear power plants. In addition, many plants in Connecticut have been requested to examine the feasibility of different intake structures. More work may be done at the Brayton Point plant due to a complicated cooling system configuration. No particular staffing or funding problems were reported. Two final BAT permits have been issued.

Region II

When last contacted (in 1980), there was no single individual at Region II available to discuss 316 or NPDES matters for power plants. During this survey, several well-informed persons were contacted. They attributed recent 316 activity to the appointment of a new Regional Administrator who placed more emphasis on 316 matters.

The major change in Region II has been the settlement of the lower Hudson River plants. This case, which was ongoing for a number of years at a cost of millions of dollars, was mentioned as one of the landmark decisions in the 316 area.

Elsewhere in New York, the situation is somewhat more complicated. Region II staff reported that they had approved 10 or 12 316(a) and (b) demonstrations and that these had been shipped to New York state authorities, where they have as yet not been finalized. There have, however, been several final decisions in the state.

The situation in New Jersey is more complex as the state prepares to take over the NPDES program. Responsibility for the state's power plant permits has been divided between the state and regional offices. EPA has retained most of the urban plants near New York City while state officials have the rest. According to UDI records, no 316(a)s or 316(b)s have received final approval. The Salem nuclear plant continues to be an important issue, with monitoring to continue until the end of 1982.

No particular funding problems were reported though staffing during the program delegation to New Jersey has caused some

problems. Two final NPDES permits have been issued in the region.

Region III

As a result of extensive decentralization, UDI found it to be more efficient to call the states separately in this region. Several utilities were also contacted. There were no particular status changes noted in the District of Columbia or Delaware. In Maryland, a decision was reached in the Calvert Cliffs case. Several major 316(a) and (b) decisions are pending including Chalk Point (316a & b), Morgantown (316b), and Wagner (316a & b).

In Pennsylvania, there are two major 316(a) demonstrations pending for the Elrama and Mitchell plants (due to unusual pool conditions on the Monongahela River). Both companies have been asked to submit additional data.

No changes or problems were reported in the state of Virginia. Several 316(b) demonstrations remain to be resolved in West Virginia. The situation in that state is complicated by acid mine drainage.

Eleven final BAT permits have been issued in Region III.

Region IV

There has been considerable activity in Region IV during the last two years. A large number of 316 demonstrations have received "internal" approval and await only the issuance of final, second-round NPDES permits.

Several 316 demonstrations in Florida were identified as major cases. One is the combined 316(a) and (b) for Cape Canaveral/Indian River plants, the other for Crystal River 1-3. A difficult situation at the Anclote plant has been resolved with helper towers. The once-through cooling system at Big Bend 4 has been nearly approved with only minor compensating matters to be resolved. A number of new units in Florida have entered the tracking system for the first time.

In Kentucky, several 316 demonstrations were accepted. As in Florida, new units have been added to the tracking system. In North Carolina, permits for two plants (Asheville and Roxboro will be adjudicated. The Brunswick 316(b) has not as yet been resolved. A newly completed nuclear plant (McGuire 1) has been given conditional 316 approval. In South Carolina, several new units will be submitting 316(b) demonstrations. ← Elin

Charles Kaplan, the Region IV contact, mentioned continued staffing problems though by and large he felt that recent permitting had gone fairly well.

Region V

Historically, Region V has had the largest 316 program. At this time, five out of the six states reported that their 316(a) cases have basically been resolved. The 316(b) program has been resolved in three of the six states. Few second round NPDES permits have been issued though one state (Wisconsin) is reportedly ready to issue nearly all power plant permits.

In Illinois, the Quad Cities 316 demonstration was mentioned both by state and utility personnel as an active case. There are a number of nuclear units still under construction which await final 316 resolution.

In Indiana, UDI was told that staffing problems have put many 316(b) demonstrations into limbo. Only one 316(a) and 316(b) demonstration remain at the company level. Demonstrations and permits for two plants are being adjudicated.

Many of the Great Lakes power plants in Michigan remain actively involved in 316(b) negotiations. Power plants mentioned by state officials include Karn, Weadock and Monroe. At the Monroe plant, the state agency is funding additional 316(b) monitoring, reportedly the first arrangement of its kind in Michigan. The Minnesota agency has completed processing of all 316 demonstrations. The Prairie Island nuclear plant was required to undertake some \$20 million worth of modifications on their intake and discharge structures.

In Ohio, a number of municipal power plants have not as yet been informed whether they must enter the 316 process. There are a number of outstanding 316(a) and 316(b) demonstrations including those for such large plants as Conesville and JM Stuart. Several 316 demonstrations were recently approved, including Sammis and Davis Besse.

Wisconsin has only two 316(a) and 316(b) demonstrations left on their agenda. The Madgett 316(a) has been reopened. The Port Washington 316(b) is still being negotiated. Several plants have continuing monitoring requirements. About a half dozen second second-round permits have been issued and UDI was told that nearly all of the remaining power plants permits will be issued shortly.

Region VI

Few 316 demonstrations have been required in this region. Recent decisions include approval for Big Cajun Two 3, a coal-fired, once-through-cooled plant due on line in 1983, and for Waterford 3, a nuclear plant under construction. Decisions have yet to be made in several cases. Region VI has issued over two-thirds of their second-round NPDES permits for power plants.

Region VII

Reports from Region VII indicate that the 316 program in these four states is winding down. Relatively few 316 demonstrations have been required. Recent decisions include George Neal 4, a large coal plant in Iowa, and several Union Electric plants in Missouri. Still outstanding in Nebraska is the 316 for Gerald Gentlemen 1 & 2, complicated by the recent commercial operation of Unit 2. Additional monitoring will be required due to the cooling lake's proximity to a recreation area. Iowa has re-issued most of their power plant NPDES permits. No particular funding or staffing problems were reported.

Region VIII

Very few 316 demonstrations and no recent actions were identified. Three or four final NPDES permits have been issued.

Region IX

California operates under a state-wide water quality control board arrangement, several of which have only one or two power plants to deal with. Three 316(b) demonstrations have recently been approved in the Los Angeles area. Only four others have been formally submitted to the permitting officials. Extensive 316(b) monitoring has been undertaken at some coastal plants. Only one required 316(a) has been approved, five are pending. In the cases of Diablo Canyon and San Onofre nuclear plants, additional monitoring and reporting work has been required. Only one NPDES permit has been issued; by court order, a short-term permit for San Onofre.

Some work has continued in Nevada and Hawaii but UDI was unable to ascertain the exact status of 316 demonstrations in those states.

Region X

There are few steam-electric plants in this region. Only one 316(a) demonstration has been approved, for the WPPSS Hanford

generator. An NPDES permit has been issued for this discharge. The Shuffleton permit 316(a) is nearly complete. Otherwise, there is apparently little steam-electric permitting activity.

TABLE 1

NATIONAL 316 SUMMARY

REGION	316 A DECISIONS *	316 A PENDING	316 B DECISIONS	316 B PENDING	FINAL BAT PERMITS**
I	47	1	46	2	2
II	17	37	19	35	2
III	54	12	44	22	11
IV	94	13	56	51	10
V	151	30	109	72	10
VI	14	7	12	9	70
VII	26	5	21	10	20
VIII	7	0	2	5	3
IX	28	10	6	32	1
X	5	3	2	6	1
TOTALS	443	118	317	244	130

*For purposes of this analysis, 316 "decisions" include both approvals and decisions on applicability (such as NR or NA). 316 "pending" includes all demonstrations under review at the agency level or still in preparation at the company level.

**INFORMAL ESTIMATE OF AGENCY CONTACT

TABLE 2
REGIONAL 316 SUMMARIES
REGION I

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
CT*	9	--	--	8	1	--
MA	21	--	--	21	--	--
ME	6	--	--	5	1	--
NH	5	--	1	6	--	--
RI	3	--	--	3	--	--
VT*	3	--	--	3	--	--
TOTALS	47	--	1	46	2	--
CODES: AP, CA, HA, ND, AR, DR, AM, AN, HA, ND, AR, DR, PR NA, NR RV PR AP, CA, NR RV						

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)
REGIONAL 316 SUMMARIES
REGION II

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
NJ**	4	11	1	5	6	5
NY*	10	23	--	10	21	2
PR	1	1	1	2	1	--
VI*	2	--	--	2	--	--
TOTALS	17	35	2	19	28	7

CODES: AP, CA, HA, ND, AR, DR, AM, AN, HA, ND, AR, DR, PR
NA, NR RV PR AP, CA, NR RV

* PERMIT AUTHORITY DELEGATED TO STATE

**PERMIT AUTHORITY IN PROCESS OF BEING DELEGATED TO STATE

TABLE 2 (CONT.)

REGIONAL 316 SUMMARIES

REGION III

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
DC	2	--	--	2	--	--
DE*	2	--	1	2	--	1
MD*	7	4	--	5	5	1
PA*	27	2	4	28	--	5
VA*	8	--	1	2	4	3
WV	8	--	--	5	--	3
TOTALS	54	6	6	44	9	13
CODES: AP, CA, HA, ND, AR, DR, AM, AN, HA, ND, AR, DR, NA, NR RV PR AP, CA, NR RV PR						

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)
REGIONAL 316 SUMMARIES

REGION IV

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
AL*	11	1	--	6	4	2
FL	17	6	1	11	11	2
GA*	15	--	--	1	2	12
KY	16	--	--	13	3	--
MS*	2	--	--	2	--	--
NC*	10	2	--	5	7	--
SC*	13	--	--	9	3	1
TN*	10	3	--	9	4	--
TOTALS	94	12	1	56	34	17

CODES: AP, CA, HA, ND, AR, DR, PR AM, AN, HA, ND, DR, PR
NA, NR RV AP, CA, NR RV AR,

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)
REGIONAL 316 SUMMARIES

REGION V

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
IL*	34	1	2	17	12	8
IN*	22	3	1	7	14	5
MI*	34	3	1	28	4	6
MN*	18	--	--	18	--	--
OH*	16	17	--	11	20	2
WI*	27	2	--	28	1	--
TOTALS	151	26	4	109	51	21

CODES: AP, CA, HA, ND, AR, DR, PR AM, AN, HA, ND, AR, DR, PR
NA, NR RV AP, CA, NR RV

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)
REGIONAL 316 SUMMARIES

REGION VI

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
AR	2	--	--	2	--	--
LA	3	--	1	3	--	1
NM	1	--	--	--	1	--
OK	4	--	--	3	1	--
TX	4	4	2	4	6	--
TOTALS	14	4	3	12	8	1

CODES: AP, CA, HA, ND, AR, DR, PR AM, AN HA, ND, AR, DR, PR
NA, NR RV AP, CA, NR RV

TABLE 2 (CONT.)
REGIONAL 316 SUMMARIES

REGION VII

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
IA*	13	1	--	10	4	--
KS*	1	--	--	--	1	--
MO*	8	1	2	7	--	4
NE*	4	--	1	4	--	1
TOTALS	26	2	3	21	5	5

CODES: AP, CA, HA, ND, AR, DR, PR AM, AN, HA, ND, AR, DR, PR
NA, NR RV AP, CA, NR RV

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)

REGIONAL 316 SUMMARIES

REGION VIII

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
MT*	1	--	--	--	1	--
ND*	2	--	--	1	1	--
UT	3	--	--	1	1	1
WY*	1	--	--	--	1	--
TOTALS	7	--	--	2	4	1
CODES: AP, CA, HA, ND, AR, DR, PR AM, AN, HA, ND, AR, DR, PR NA, NR RV AP,CA,NR RV						

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)

REGIONAL 316 SUMMARIES

REGION IX

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
CA*	21	5	1	3	4	20
GU	--	2	--	--	--	2
HI*	5	--	1	1	2	3
NV*	2	--	1	2	--	1
TOTALS	28	7	3	6	6	26

CODES: AP, CA, HA, ND, AR, DR, AM, AN, HA, ND, AR, DR, PR
 NA, NR RV PR AP, CA, NR RV

* PERMIT AUTHORITY DELEGATED TO STATE

TABLE 2 (CONT.)

REGIONAL 316 SUMMARIES

REGION X

STATE	316 A AGENCY APPROVED	316 A AGENCY PENDING	316 A COMPANY PREPARATION	316 B AGENCY APPROVED	316 B AGENCY PENDING	316 B COMPANY PREPARATION
AK	1	--	2	--	3	--
OR*	2	--	--	1	--	1
WA*	2	1	--	1	2	--
TOTALS	5	1	2	2	5	1

CODES: AP, CA, HA, ND, AR, DR, PR AM, AN, HA, ND, AR, DR, PR
 NA, NR RV AP, CA, NR RV

* PERMIT AUTHORITY DELEGATED TO STATE

Table 3
316 Status Report
State by State Summary

Region I

CONNECTICUT

Operator	Plant Name	316A	316B	NOTES
Connecticut Light & Power	Devon 3-8	NR	AP	
	Montville 4-6	NR	AP	
Connecticut Yankee Power Co.	Connecticut Yankee 1	NR	AP	
Hartford Elec. Light Co.	Middletown 1-4	NR	AP	
Northeast Nuclear Energy	Millstone 1-3	AP	RV	(1)
United Illuminating Co.	Bridgeport 1-3	NR	AP	
	English 4-8	NR	AP	
	New Haven Harbor 1	NR	AP	
	Steel Point 1-11	NR	AP	

MASSACHUSETTS

Boston Edison Co.	L Street 1	NR	AP	
	Mystic 4-7	NR	AP	
	New Boston 1&2	NR	AP	
	Pilgrim 1	AP	AP	
Braintree Elec. Light	Allen Street 1&3	NR	AP	
	Potter Station	NR	AP	
Cambridge Elec. Light	Blackstone Street	NR	AP	
	Kendall Square 1-3	NR	AP	
Canal Electric Co.	Canal 1&2	AP	AP	
Holyoke Gas & Elec Dept.	Cabot-Holyoke 6&8&9	NR	AP	
Holyoke Water Power	Mount Tom 1	NR	AP	
	Riverside 9	NR	AP	

Montaup Electric Co.	Somerset 3-6	NR	AP
New Bedford Gas & Light	Cannon Street 1&2	NR	AP
New England Power Co.	Brayton Point 1-3	NR	AP
	Brayton Point 4	NR	NA
	Salem Harbor 1-4	NR	AP
Taunton Municipal Light	BF Cleary 8	NR	AP
	West Water St. 4-7	NR	AP
Western Mass. Elec. Co.	West Springfield 4-7	NR	AP
Yankee Atomic Elec Co.	Yankee 1	NR	AP

MAINE

Bangor Hydro Elec. Co.	EM Graham 3-5	NR	AP
Central Maine Power Co.	Cape 1-3	NR	AP
	Mason 1-5	NR	AP
	WF Wyman 1-4	AP	AP
Maine Public Service Co.	Caribou 1&2	NR	AP
Maine Yankee Atomic	Maine Yankee 1	AP	RV

NEW HAMPSHIRE

Public Serv. New Hampshire	Daniel Street 5-7	NR	AP
	Manchester 1	NR	AP
	Merrimack 1&2	NR	AP
	Newington 1	PR	AP
	Schiller 3-6	NR	AP
	Seabrook 1&2	AP	AP (2)

RHODE ISLAND

Narragansett Elec. Co.	Manchester St 9-11	NR	AP
	South Street	NR	AP
Newport Elec Corp.	West Howard St	NR	AP

VERMONT

Burlington Elec. Light	Moran 1-3	NR	AP
Cen Vermont Public Serv.	Milton 1	NR	AP
Vermont Yankee Nuc. Power	Vermont Yankee	AP	AP

Notes:

- (1) Additional information submitted in July 1981. Feasibility studies of intake modifications required of many plants in Connecticut. Millstone 3 under construction.
- (2) Plant under construction.

Region II

NEW JERSEY

Operator	Plant Name	316A	316B	NOTES
Atlantic City Elec. Co.	BL England 1-3	NR	CA	
Deepwater Operating Co.	Deepwater 1&3-7	RV	RV	
Jersey Central Power & Lt.	EH Werner 4	NR	CA	
	Gilbert 1-3	ND	CA	
	Oyster Creek 1	RV	RV	
	Sayreville 1-5	PR	RV	
Public Service Elec. & Gas	Bergen 1&2	RV	PR	
	Burlington 6&7&105	CA	CA	
	Essex 1	RV	RV	
	Hope Creek 1	NA	PR	(1)
	Hudson 1&2	RV	PR	
	Kearny 7&8	RV	PR	
	Linden 1&2&4	RV	RV	
	Mercer 1&2	RV	CA	
	Salem 1&2	RV	PR	
	Sewaren 1-5	RV	RV	

NEW YORK

Central Hudson Gas & Elec.	Danskammer Point 1-4	AP	AP	
	Roseton 1&2	AP	AP	
Consolidated Edison Co.	Arthur Kill 2&3	RV	NR	
	Astoria 1-5	RV	ND	
	East River 5-7	RV	NR	
	Indian Point 2	AP	AP	
Long Island Lighting Co.	EF Barrett 1&2	RV	RV	
	Far Rockaway 4	RV	RV	
	Glenwood 4&5	RV	RV	
	Northport 1-4	RV	RV	
	Port Jefferson 1-4	RV	RV	
	Shoreham 1	AP	PR	(1)

New York State Elec. & Gas	Goudey 7&8	RV	RV	(1)
	Greenidge 1-4	RV	RV	
	Hickling 1&2	RV	RV	
	Jennison 1&2	RV	RV	
	Milliken 1&2	RV	NR	
	Somerset 1	RV	RV	
Niagara Mohawk Power Corp.	Albany 1-4	RV	RV	(2)
	CR Huntley 63-68	AP	AP	
	Dunkirk 1-4	RV	RV	
	Lake Erie 1	NA	RV	
	Nine Mile Point 1	RV	RV	
	Oswego 1-6	RV	RV	
Orange & Rockland Util.	Bowline Point 1&2	AP	AP	
	Lovett 1-5	AP	AP	
Power Auth. St. New York	700 MW Fossil	NA	RV	(2)
	Astoria 6	RV	PR	
	Indian Point 3	AP	AP	
	JA Fitzpatrick 1	RV	RV	
Rochester Gas & Elec.	Beebee	RV	RV	
	RE Ginna 1	RV	RV	
	Russell 1-4	RV	RV	
PUERTO RICO				
PR Elec. Power Auth.	Aguirre 1&2	RV	RV	
	Palo Seco 1-4	PR	AP	
	South Coast 1-6	CA	NR	
VIRGIN ISLANDS				
Virgin Islands Wtr. & Pwr.	Saint Croix 1&2	NR	CA	
	Saint Thomas	NR	CA	

Notes:

(1) Plant under construction.

(2) Plant still in design.

Region III

DISTRICT OF COLUMBIA

Operator	Plant Name	316A	316B	NOTES
Potomac Elec. Power Co.	Benning 13-16	NR	NR	(1)
	Buzzard Point 2-6	NR	NR	(1)

DELAWARE

Delmarva Power & Light	Delaware City 1-3	PR	PR	
	Edge Moor 1-5	AP	AP	
	Indian River 1-3	AP	AP	

MARYLAND

Baltimore Gas & Elec. Co.	Calvert Cliffs 1&2	AP	AP	
	CP Crane 1&2	RV	RV	
	Gould Street 3	NR	AP	
	HA Wagner 1-4	RV	RV	
	Riverside 1-5	RV	RV	
	Westport	NR	NR	
Delmarva Power & Light	Vienna 8	NA	PR	
Potomac Edison Co.	RP Smith 3&4	AP	AP	
Potomac Elec. Power Co.	Chalk Point 1&2	RV	RV	
	Dickerson 1-3	AP	AP	
	Morgantown 1&2	AP	RV	

PENNSYLVANIA

Duquesne Light Co.	Beaver Valley 1&2	NA	AP	(2)
	Cheswick 1	AP	AP	
	Elrama 1-4	ND	AP	
	FR Phillips 1-4	NR	AP	
	Shippingport 1	NR	AP	
Metropolitan Edison Co.	Portland 1&2	NR	AP	
	Three Mile Island 1&2	NA	AP	
	Titus 1-3	NR	PR	
Pennsylvania Elec. Co.	Front Street 1-5	NR	AP	
	Homer City 1-3	NA	NR	
	Warren 1&2	NR	AP	

	Williamsburg 5	DR	AP	
Pennsylvania Power & Lt.	Brunner Island 1-3	AP	AP	
	Martins Creek 1-4	NR	AP	
	Montour 1&2&11	NA	AP	
	Sunbury 1-4	NR	AP	
Pennsylvania Power Co.	Bruce Mansfield 1&2	NA	AR	
	New Castle 1-5	DR	NR	
Philadelphia Elec. Co.	Barbadoes 3&4	AP	AP	
	Chester 5&6	NR	AP	
	Cromby 1&2	DR	DR	
	Delaware 7&8	NR	AP	
	Eddystone 1-4	NR	DR	
	Limerick 1&2	NA	NR	(3)
	Peach Bottom 2&3	RV	AP	
	Richmond 9&12	NR	AP	
	Schuylkill 1&3&9	AP	AR	
	Southwark 1&2	NR	AP	
UGI Corp.	Hunlock 3	NR	AP	
West Penn. Power Co.	Armstrong 1&2	NR	AP	
	Hatfields Ferry 1-3	NR	AP	
	Mitchell 1-3	AR	DR	
	Springdale 7&8	NR	NR	(1)

VIRGINIA

Appalachian Power Co.	Clinch River 1-3	NA	AP	
	Glen Lyn 5&6	AP	AP	
Potomac Elec. Power Co.	Potomac River 1-5	NR	PR	
Virginia Elec. & Power	Bremo Bluff 3&4	NR	PR	
	Chesterfield 2-6	NR	RV	
	Portsmouth 1-4	AP	RV	
	Possum Point 1-5	PR	RV	
	Surry 1&2	AP	PR	
	Yorktown 1-3	NR	RV	

WEST VIRGINIA

Appalachian Power Co.	Kanawha River 1&2	AP	AP	
Central Operating Co.	Philip Sporn 1-5	AP	AP	
Monongahela Power Co.	Albright 1-3	NR	NR	(4)
	Fort Martin 1&2	NA	PR	
	Rivesville 5&6	AP	PR	
	Willow Island 1&2	NR	AP	

Ohio Power Co.

Kammer 1-3

AP

AP

Virginia Elec. & Power Co.

Mount Storm 1-3

NR

PR

Notes:

- (1) Status the result of age and use of plant.
- (2) Additional unit under construction on site.
- (3) Plant under construction.
- (4) Status the result of local water quality conditions; acid mine drainage.

Region IV

ALABAMA

Operator	Plant Name	316A	316B	NOTES
Alabama Electric Coop.	Tombigbee 1	NR	RV	(1)
	Tombigbee 2&3	NA	PR	(State app)
Alabama Power Co.	Barry 1-5	RV	RV	(1) ??
	EC Gaston 1-5	NA	RV	(1) ?
	Gorgas Two 5-10 ??	AP	AP	(
	Greene County 1&2	NR	AP	
	JM Farley 1&2	NA	PR	
	Miller 1-4	NR	AP	(2)
Tennessee Valley Authority	Bellefonte 1&2	NR	CA	(3)
	Browns Ferry 1-3	AP	RV AP	(1)
	Colbert 1-5	AP	AP	
	Widows Creek 1-8	AP	AP	

FLORIDA

Florida Power & Light	Cape Canaveral 1&2	RV	RV	(1) ⁵ AP
	Cutler 4-6	AP	AP	
	Fort Meyers 1&2	AP	AP	
	Martin County 1&2	NA	AP	
	Port Everglades 1-4	NR	RV AP	
	Riviera 3&4	NR	AP	
	Sanford 3-5	NR	RV AP (1)	
	St Lucie 1&2	NR	AP	(X, 2) { Further studies
Florida Power Corp.	Anclote 1&2	AP	AP	
	Crystal River 1-3	AR RV	AR RV	
	Crystal River 4&5	NA	AP	(3)
	Higgins 1-3	NR	RV AP (1)	
	PL Bartow 1-3	RV AP	RV PR	
Gulf Power Co.	Crist 1-7	NR	AP	
	Lansing Smith 1&2	NR	AR AP	
	Scholz 1&2	NR	RV AP (1)	
Jacksonville Elec. Auth.	JD Kennedy 8-10	NR	AP	
	Northside 1-3	AP	AM	
	St Johns River 1&2	NA	RV NA	(1, 4)
Orlando Util. Commission	Indian River 1-3	RV AP	RV AP	(1, 5)
Seminole Electric Coop.	Seminole 1&2	NA	AP	(3)

Tampa Electric Co.

Big Bend 1-4
Gannon 1-6
Hookers Point 1-5

RV AP RV AP (1,6)
ND ND (7)
ND ND (7)

GEORGIA

Georgia Power Co.

Arkwright 1-4
Atkinson 1-4
Bowen 1-4
Hammond 1-4
Harllee Branch 1-4
Hatch 1&2
Jack McDonough 1&2
McManus 1&2
Mitchell 1-3
Scherer 1-4
Vogtle 1&2
Wansley 1&2
Yates 1-7

AP NR PR NR
NR NR PR NR
NA NA PR NR
PR NR PR NR
NR NR PR NR
AP NA PR NR
NR NR PR NR
NR NR PR NR
NR NR PR NR
NA ND AP (3)
NA ND AP (3)
NA PR NR
AP NR PR NR

Savannah Elec. & Power Co.

~~Effingham 1~~ Mackintosh
Port Wentworth 1-4

NR NR
NR NR
CA PR
NR
[Coal Fired] 1982 conv. new

KENTUCKY

Big Rivers Elec. Corp.

Coleman 1-3
DB Wilson 1&2
Green 1&2
Henderson Muni 1&2
Reid 1

NR AP
NA AP (3)
NA AP
NA AP
NR AP

Cincinnati Gas & Electric

East Bend 1&2

NA AP (2)

Kentucky Utilities Co.

Ghent 1&2
Ghent 3&4
Green River 1-4
JK Smith 1&2

NA AP
NA CA AP (1,2)
AP AP
NA AP (3)

Louisville Gas & Electric

Cane Run 3-6
Mill Creek 1-4
Trimble County 1-4

NR RV AP (1)
NR RV AP (1)
NA CA (3)

Owensboro Municipal Util.

Elmer Smith 1&2

AP AP

Tennessee Valley Authority

Paradise 1-3
Shawnee 1-10

NR RV (1)
NR AP

MISSISSIPPI

Mississippi Power Co.

Jack Watson 1-5

AP AP

~~Tennessee Valley Authority~~

~~Yellow Creek 1&2~~

~~AP CA (8)~~

NORTH CAROLINA

Carolina Power & Light

Asheville 1&2
Brunswick 1&2
Cape Fear 1&3&5&6
Lee 1-3
Mayo 1&2
Roxboro 1-3
Roxboro 4
Shearon Harris 1&2

~~HA~~ ~~AP~~ ~~HA~~ ~~AP~~
NR AM AM
NR AP RV
NA AP RV
NA ND (3)
~~HA~~ ~~AP~~ ~~HA~~ ~~AP~~
NA ~~HA~~ ~~AP~~ / NR
NA ND (3)

Revised?

Duke Power Co.

Allen 1-5
Marshall 1-4
Riverbend 4-7
WB McGuire 1&2
Below CR

AP NR
AP NR
AP NR
CAAP ~~CAAP~~ (2)
NR ~~AP~~ ??

SOUTH CAROLINA

Carolina Power & Light

HB Robinson 1&2

AP AP

Revised ??

Duke Power Co.

~~Cherokee 1-3~~
Lee 1-3
Oconee 1-3

~~NA~~ ~~CA~~ (8)
AP AP
NR AP

South Carolina Elec. & Gas

AM Williams 1
Canadys 1-3
VC Summer 1
Wateree 1&2

AP ~~RV~~ - AP?
AP AP
AP ~~CAAP~~
AP AP

South Carolina Public Serv.

Cross 1&2
Grainger 1&2
Jefferies 1-4
Winyah 1&2 1-4
~~Winyah 3&4~~

NA AP (3)
NR ~~RV~~ AP (1)
NR ~~RV~~ AP (1,9)
NA AP
~~NA~~ ~~PR~~

TENNESSEE

Dept. of Energy

~~Clinch River~~

~~NA~~ ~~RV~~ (1)

Tennessee Valley Authority

Bull Run 1
Cumberland 1&2
Gallatin 1-4
~~Hartsville 1-4~~
John Sevier 1-4
Johnsonville 1-10
Kingston 1-9
~~Phipps Bend 1&2~~
Sequoyah 1&2
TH Allen 1-3
Watts Bar 1-4

AP AP
RV AP (1)
AP ~~RV~~ CA (1)
~~NA~~ ~~ND~~ (8)
RV RV
AP AP
AP AP
~~NA~~ ~~CA~~ (8)
~~PR~~ ~~ND~~ ~~CAAP~~ (2)
NR AP
NR AP

Notes:

- (1) Demonstration has received tentative, internal approval at regional level.
- (2) Additional unit(s) under construction at site.
- (3) Plant under construction.
- (4) Plant in design.
- (5) Indian River and Cape Canaveral demonstrations combined.
- (6) Big Bend 4 under construction, commercial in 1985, with once through cooling. *7. Fine mesh screens on Units 3 & 4*
- (7) No decision due to poor ambient water quality.
- (8) Plant indefinitely deferred.
- (9) Cooling towers being installed by Army Corps of Engineers as part of Santee Cooper diversion project.

Region V

ILLINOIS

Operator	Plant Name	316A	316B	NOTES
Cen. Illinois Public Ser.	Coffeen 1&2	CA	RV	
	Grand Tower 3&4	NR	AP	
	Hutsonville 1-4	NR	AP	
	Meredosia 1-4	NR	AP	
	Newton 1&2	AP	PR	(1)
Central Illinois Light Co.	Duck Creek 1-3	NA	NR	(1)
	ED Edwards 1-3	AP	AP	
	RS Wallace 3-7	AP	PR	
Commonwealth Edison Co.	Braidwood 1&2	NR	CA	(2)
	Byron 1&2	NR	CA	(2)
	Carroll County 1&2	PR	PR	(3)
	Collins 1-5	NA	CA	
	Dresden 1-3	AP	AP	
	Fisk 19	NR	ND	
	Joliet 6-8	NR	ND	
	Kincaid 1&2	AP	AP	
	La Salle 1&2	NA	CA	(2)
	Quad Cities 1&2	RV	RV	(4)
	Waukegan 6-8	AP	RV	
	Will County 1-4	NR	ND	
	Zion 1&2	AP	RV	
Electric Energy Inc.	Joppa 1-6	AP	AR	
Illinois Power Co.	Baldwin 1-3	NA	NR	
	Clinton 1&2	AP	PR	(2)
	Havana 1-6	NR	AP	
	Hennepin 1&2	NR	AP	
	Vermilion 1&2	NA	AP	
	Wood River 1-5	NR	RV	
Iowa Illinois Gas & Elec.	Moline 5-8	NR	AP	
Mt Carmel Pub. Utility	Mount Carmel 3&4	NR	RV	
Peru Light Dept.	Peru 4	NR	PR	
South Illinois Power Coop.	Marion 2-4	PR	PR	
Springfield Wtr. Lt. & Pwr.	Dallman 1-3	AP	RV	
	Lakeside 1-7	AP	RV	
Union Elec Co.	Venice No Two 1-6	NR	RV	

Western Illinois Power Coop.	Pearl 1	NR	AR
Winnetka Elec Dept.	Winnetka 4-7	NR	AP

INDIANA

Commonwealth Edison Co.	State Line 3&4	AP	RV
Hoosier Energy Division	Merom 1&2	CA	AP (2)
	Ratts 1&2	CA	RV
Indiana & Mich. Electric	Breed 1	PR	PR
	Rockport 1&2	NA	PR (2)
	Tanners Creek 1-4	AP	RV
	Twin Branch 4&5	AP	NR (5)
Indiana-Kentucky Elec.	Clifty Creek 1-6	AP	RV
Indianapolis Power & Lt.	EW Stout 1-7	AP	NR
	HT Pritchard 1-6	CA	NR
	Patriot 1-3	NA	ND
	Petersburg 1-3	CA	RV
Logansport Mun. Util.	Logansport 4&5	CA	PR
No. Indiana Public Serv.	Bailly 7&8	CA	RV
	Dean H Mitchell	AP	RV
	Michigan City 1-3&12	RV	RV
	RM Schahfer 14&15	NA	PR
Public Service Indiana	Cayuga 1&2	HA	RV
	Edwardsport 6-8&66	AP	AP
	Marble Hill 1&2	NR	PR (2)
	Noblesville 1&2	AP	AP
	RH Gallagher 1-4	AP	CA
	Wabash River 1-6	HA	RV
South. Indiana Gas & Elec.	Culley 1-3	AP	RV
	Ohio River 1-7	AP	ND
	Warrick 1-4	AP	RV

MICHIGAN

Consumers Power Co.	BC Cobb 1-5	NR	DR
	BE Morrow 1-4	RV	RV
	Big Rock Point	NR	AP
	DE Karn 1-4	RV	DR
	JC Weadock 1-8	RV	DR
	JH Campbell 1&2	AP	AR
	JH Campbell 3	AP	AP
	JR Whiting 1-3	NR	HA
	Midland 1-2	PR	PR (2)

	Palisades 1	NA	AP	
Detroit Edison Co.	Belle River 1&2	AP	AP	(2)
	Connors Creek 8-16	NR	AP	
	Delray 11-16	NR	AP	
	Enrico Fermi 1&2	NR	AP	(1)
	Harbor Beach 1	NR	AP	
	Marysville 6-8	NR	AP	
	Monroe 1-4	AP	PR	(6)
	Port Huron 2&3	NR	AP	
	River Rouge 1-3	NR	AP	
	St Clair 1-7	NR	RV	
	Trenton Channel 7-9	NR	AP	
Detroit Public Light. Dept.	Mistersky 1-7	NR	AP	
Grand Haven Bd. Lt. & Pwr.	JB Sims 1&2	NR	NR	
Holland Bd. Public Works	James DeYoung 3-6	NR	AP	
Indiana & Mich. Electric	DC Cook 1&2	AP	AR	
Lansing Bd. Water & Light	Eckert 1-6	AP	AP	
	Erickson 1	AP	AP	
	Ottawa Street 1-5	AP	AP	
Marquette Bd. Lt. & Power	Shiras 1&2	AP	AP	
	Shiras 3	CA	CA	(2)
No. Michigan Elec. Co.	Advance 1-3	NR	AP	
Traverse City Lt. & Power	Bayside 1-4	NR	AP	
Upper Peninsula Gen. Co.	Presque Isle 1-6	AP	AP	
	Presque Isle 7-9	NR	AP	
Upper Peninsula Power Co.	Escanaba 1&2	NR	AP	
	JH Warden 1	AP	AP	
Wolverine Elec. Coop.	Van Dyke 6	NA	AP	
Wyandotte Dept. Muni.	Wyandotte 4&5&7	NR	RV	

MINNESOTA

Interstate Power Co.	Fox Lake 1-3	AP	AP
Minnesota Power & Light	Clay Boswell 1-4	AP	NR
	ML Hibbard 1-4	NR	AP
	Syl Laskin 1&2	AP	AM
Northern States Power Co.	Alan S King 1	AP	CA
	Black Dog 1-4	CA	CA

	High Bridge 3-6	NR	AP	
	Minnesota Valley 3	AP	AP	
	Monticello 1	AP	AP	
	Prairie Island 1&2	CA	AM	
	Red Wing 1&2	NR	AP	
	Riverside	AP	AP	
	Sherburne County 1-3	NA	AP	
	Wilmarth 1&2	AP	AP	
Otter Tail Power Co.	Hoot Lake 1-3	CA	AP	
	Ortonville 1	NR	AP	
Rochester Elec Dept.	Silver Lake 1-4	CA	CA	
United Power Association	Elk River 1-3	NR	CA	
OHIO				
Cardinal Operating Co.	Cardinal 1&2	AP	RV	
	Cardinal 3	NR	RV	
Cincinnati Gas & Electric	Miami Fort 3-8	AP	AP	
	WC Beckjord 1-6	AP	AP	
Cleveland Elec. Illum. Co.	Ashtabula 1-9	AP	AP	
	Avon Lake 1-9	RV	RV	
	Eastlake 1-5	RV	RV	
	Lake Shore 14-18	RV	RV	
Cleveland Pub. Util. Dept.	Lake Road 8-11	ND	ND	(5)
Columbus & So. Ohio Elec.	Conesville 1-6	RV	RV	
	Picway 3-5	AP	NR	
Dayton Power & Light Co.	FM Tait 1-5&7&8	RV	RV	
	Hutchings 1-6	RV	RV	
	JM Stuart 1-4	RV	RV	
Hamilton Dept Public Util.	Hamilton 7-9	ND	ND	
Ohio Edison Co.	East Palestine 1&3-4	NR	NR	(5)
	Edgewater 2-4	RV	DR	
	Gorge 6&7	RV	AP	
	Mad River 2&3	AP	AP	
	Niles 1&2	RV	ND	
	RE Burger 1-5	AP	RV	
	Toronto 5-7	AP	NR	
	WH Sammis 1-7	AP	AP	
Ohio Power Co.	Gavin 1&2	NA	AP	
	Muskingum River 1-4	RV	RV	
Ohio Valley Elec. Corp.	Kyger Creek 1-5	AP	RV	

Painesville Light & Power	Painesville 1-6	ND	ND
Piqua Mun. Power System	Piqua 4-7	ND	ND
Shelby Mun. Utilities	Shelby 1-4	ND	ND
St Marys Mun. Lt. & Power	Saint Marys 2-6	ND	ND
Toledo Edison Co.	Acme	AP	RV
	Bay Shore 1-4	AP	AR
	Davis Besse 1	NR	AP

WISCONSIN

Dairyland Power Coop.	Alma 1-5	NR	AP
	EJ Stoneman 1&2	NR	AP
	Genoa 2	NR	AP
	Genoa 3	ND	AP
	Madgett 1	RV	CA
Lake Superior Dist. Power	Bay Front 1-6	NR	AP
Madison Gas & Elec. Co.	Blount Street 1-7	NR	AP
Manitowoc Public Utility	Manitowoc 3-6	NR	AP
Menasha Elec. & Water Dept.	Menasha 1-4	NR	AP
Northern States Power Co.	French Island 1&2	NR	AP
Richland Center Municipal	Richland Center 1-4	NR	AP
Superior Wtr. Lt. & Power	Winslow 2&3	NR	AP
Wisconsin Elec. Power	Commerce Street 15	NR	AP
	Lakeside 1-12	AP	AP
	Oak Creek 1-8	AP	AP
	Pleasant Prairie 1&2	NA	AP
	Point Beach 1&2	AP	AP
	Port Washington 1-5	NR	RV
	Valley 1&2	NR	AP
Wisconsin Power & Light	Blackhawk 3&4	NR	AP
	Columbia 1&2	NR	AP
	Edgewater 1-4	AP	AP
	Edgewater 5	AP	AM
	Nelson Dewey 1-2	NR	AP
	Rock River 1&2	AP	AP

(7)

Wisconsin Public Service	JP Pulliam 1-8	AP	AM	
	Kewaunee 1	AP	AP	
	Weston 1&2	AP	AP	
	Weston 3	NA	AM	(7)

Notes:

- (1) Additional unit(s) under construction on site.
- (2) Plant under construction.
- (3) Plant in design.
- (4) Joint state permitting effort, Illinois and Iowa. Extremely long diffuser discharge pipe crosses state line.
- (5) Plant on standby.
- (6) State has funded additional 316(b) monitoring work.
- (7) Plant not yet in operation. 316(b) demonstration basically approved, will require post-operative monitoring.

Region VI

ARKANSAS

Operator	Plant Name	316A	316B	NOTES
Arkansas Power & Light	Independence 1&2	NR	AP	(1)
	White Bluff 1&2	NR	AP	

LOUISIANA

Cajun Elec Power Coop.	Big Cajun Two 3	AP	AP	(1,2)
Gulf States Utilities	Willow Glen 1-5	AP	AP	
Louisiana Power & Light	Nine Mile Point 1-5	ND	ND	(1)
	Waterford 3	AP	AP	

NEW MEXICO

Public Service New Mexico	San Juan 1-4	NR	ND	(3)
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OKLAHOMA

Oklahoma Gas & Elec Co.	Muskogee 5&6	NR	AP	(3)
	Seminole 1-3	NR	ND	
	Sooner 1-4	NR	AP	(3)
Public Service Oklahoma	Northeastern 1-4	NR	AP	

TEXAS

Central Power & Light Co.	Coletto Creek 1	AP	AP	(4)
	Coletto Creek 2	ND	ND	
Dallas Power & Light Co.	Lake Hubbard 1&2	NR	ND	
Gulf States Utilities	Sabine 1-4	ND	ND	
Houston Lighting & Power	Cedar Bayou 1-3	PR	AP	(3)
	PH Robinson 1-4	PR	ND	
	WA Parish 1-8	ND	ND	
Lower Colorado River Auth.	Fayette 1&2	NR	AP	
Texas Mun Pwr Agency	Gibbons Creek 1	AP	AP	(1)
Texas Util. Gen. Co.	Forest Grove 1	ND	ND	(1)

Notes:

- (1) Plant under construction.
- (2) Big Cajun Two 3 under construction, commercial in 1983, with once through cooling.
- (3) Additional unit(s) under construction on site.
- (4) Plant in design.

Region VII

IOWA

Operator	Plant Name	316A	316B	NOTES
Ames Muni Elec. System	Ames Two 8	NA	NR	
Eastern Iowa Light & Power	FE Fair 1&2	NR	AP	
Interstate Power Co.	Dubuque 2-4	NR	AP	
	Lansing 1-3	AP	RV	
	Lansing 4	AP	RV	
	ML Kapp 1&2	NR	AP	
Iowa Illinois Gas & Electric	Louisa 1	NA	ND	(1)
	Riverside 3-5	NR	AP	
Iowa Power & Light Co.	Council Bluffs 1&2	ND	AP	
	Council Bluffs 3	AP	RV	
	Des Moines 4-7	NR	AP	
Iowa Public Service Co.	George Neal 1-3	NR	AP	
	George Neal 4	AP	AP	
	Maynard 6&7	NR	AP	

KANSAS

Kansas City Bd. Pub. Util.	Nearman Creek 1	AP	RV	
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MISSOURI

Associated Elec. Coop.	New Madrid 1&2	AP	AP	
	Thomas Hill 3	PR	PR	(1)
Kansas City Power & Lt.	Iatan 1	AP	PR	(2)
Missouri Public Service	Sibley 1-3	NR	AP	
St Joseph Light & Power	Edmond 4&5&7	NR	AP	
	Lake Road 4	RV	PR	
Union Electric Co.	Callaway 1	PR	PR	(1)
	Labadie 1-4	AP	AP	
	Meramec 1-4	NR	AP	
	Rush Island 1&2	AP	AP	
	Sioux 1&2	NR	AP	

NEBRASKA

Nebraska Public Power Dist.	Cooper 1	AP	AP	
	Gerald Gentleman 1&2	AR	AR	(3)
Omaha Public Power Dist.	Fort Calhoun 1	NR	AP	
	Nebraska City 1	AP	AP	
	North Omaha 1-5	NR	AP	

Notes:

- (1) Plant under construction.
- (2) Special short-term 316(b) required.
- (3) With commercial operation of Unit 2, additional 316(a) and 316(b) work has been required.

Region VIII

MONTANA

Operator	Plant Name	316A	316B	NOTES
Montana Power Co.	JE Corette 1	AP	ND	

NORTH DAKOTA

Basin Elec Power Coop.	Leland Olds 1&2	AP	ND	
United Power Association	Stanton 1	AP	NR	

UTAH

Utah Power & Light Co	Carbon 1&2	NR	PR	
	Gadsby 1-3	NR	RV	
	Hale 2	AP	NR	

WYOMING

Pacific Power & Light	Dave Johnston 1-4	AP	ND	
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Region IX

CALIFORNIA

Operator	Plant Name	316A	316B	NOTES
LA Dept. Water & Power	Harbor 1-5	NR	AP	
	Haynes 1-6	NR	AP	
	Scattergood 1&2	NR	AP	
Pacific Gas & Elec. Co.	Contra Costa 1-7	RV	RV	
	Diablo Canyon 1&2	NR	PR	(1,2)
	Humboldt 1&2	NR	PR	
	Hunters Point 2-4	NR	PR	
	Morro Bay 1-4	NR	PR	(3)
	Moss Landing 1-5	RV	PR	
	Moss Landing 6&7	NR	PR	
	Oleum 1&2	NR	PR	
	Pittsburg 1-7	RV	RV	
Potrero 1-3	RV	RV		
Sacramento Mun. Util.	Rancho Seco 1	NA	PR	
San Diego Gas & Elec.	Encina 1-5	PR	PR	
	Silver Gate 1-4	NR	PR	
	South Bay 1-4	NR	PR	
	Station B 1-4	NR	PR	
Southern Calif. Edison	Alamitos 1-6	NR	PR	
	El Segundo 1-4	NR	PR	
	Huntington Beach 1-4	NR	PR	
	Long Beach 10&11	NR	PR	
	Mandalay 1&2	NR	PR	
	Ormond Beach 1&2	AP	PR	
	Redondo Beach 1-8	NR	PR	
	San Onofre 1	NR	RV	(4)
San Onofre 2&3	RV	PR		

GUAM

Guam Power Authority	Cabras	RV	PR
	Tanguisson 1&2	RV	PR

HAWAII

Citizens Utilities Co.	Port Allen S1	PR	NR
Hawaii Electric Light Co.	Shipman 1-4	AP	RV
Hawaiian Elec Co	Honolulu 5&7-9	NR	PR
	Kahe 1-5	AP	PR
	Waiau 1-8	NR	PR
Maui Electric Co.	Kahului 1-4	NR	RV

NEVADA

Nevada Power Co.	Clark 1-3	NA	NR
	Sunrise 1	NA	NR
Sierra Pacific Power Co.	Tracy 1&2	DR	PR

Notes:

- (1) Plant under construction.
- (2) Special thermal monitoring required for state.
- (3) Will use Moss Landing 316(b) demonstration.
- (4) Short-term permit ordered by recent court decision.

Region X

ALASKA

Operator	Plant Name	316A	316B	NOTES
Chugach Electric Assn.	Knik Arm 1-5	PR	ND	
Fairbanks Utility System	Fairbanks	PR	ND	
Golden Valley Elec Assoc.	Healy 1	AP	ND	

OREGON

Portland General Electric	Pebble Springs 1&2	NA	PR	
	Trojan 1	NA	NR	

WASHINGTON

Puget Sound Power & Lt.	Shuffleton 1&2	RV	NR	(1)
Washington Pub. Pwr. Sys.	Hanford	AP	ND	
	WPPSS 1-3	NA	ND	

Note:

(1) Permit will have seasonal limits on thermal discharge.

ATTACHMENT A

Status 316(a) Codes

AP 316(a) request approved.
AR Additional information required.
CA 316(a) request conditionally approved, additional monitoring may be required.
DR Demonstration rejected due to insufficient information. No decision.
HA Administrative adjudicatory hearing scheduled or in progress.
NA Not applicable (no thermal discharge, closed cycle cooling).
ND No determination on applicability.
NR Not required (thermal discharges meet water quality standards).
PR Demonstration/study program is in preparation at applicant level.
RV Demonstration has been submitted to EPA region or state agency and is under review.

Status 316(b) Codes

AM Existing intake approved with modifications; further monitoring required.
AN Existing intake approved with modifications; no further monitoring is required.
AP Existing intake structure approved. No further monitoring or modifications necessary.
AR Additional information required.
CA Existing structure conditionally approved; further monitoring is required.
DR Demonstration rejected due to insufficient information. No decision.
HA Administrative adjudicatory hearing scheduled or in progress.
ND No determination on applicability.
NR No monitoring is required. In essence, existing structure acceptable or plant used very infrequently.
PR Monitoring program is in progress at company level. Nothing submitted to agency.
RV 316(b) demonstration report has been submitted to permit agency and is under review at state or regional level.

ATTACHMENT B

Individuals Contacted During Preparation of
February 1982 Update of 316 Status Report

Utility Data Institute

Region I

EPA	
Ted Landry	617-223-5033

Region II

EPA	
Richard Block	212-264-1302
New Jersey	
Richard Califano	609-292-0407
New York	
Allen Geisendorf	518-457-6717

Region III

Delaware	
Rod Bartchey	302-736-4761
Maryland	
John Veil	301-383-5670
Pennsylvania	
Jim Ulanoski	717-787-8184
Virginia	
John Godfrey	804-257-0056

Region IV

EPA	
Charles Kaplan	404-881-2328

ATTACHMENT B

Individuals Contacted During Preparation of
February 1982 Update of 316 Status Report

Utility Data Institute

Region I

EPA Ted Landry	617-223-5033
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Maryland John Veil	301-383-5670
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Pennsylvania Jim Ulanoski	717-787-8184
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Virginia John Godfrey	804-257-0056
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Region IV

EPA Charles Kaplan	404-881-2328
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Region V

EPA	
Gary Milburn	312-353-2098
Illinois	
Dan Umfleet	217-782-0610
Indiana	
Denny Clark	317-633-0799
Michigan	
Bob Basch	517-373-0927
Minnesota	
Mark Lahtinen	612-296-7750
Ohio	
Joe Reidy	614-466-2390
Wisconsin	
Lee Libenstein	608-266-0164

Region VI

EPA	
Oscar Cabra	217-767-3663

Region VII

EPA	
Mike Turvey	816-374-5955
Iowa	
Steve Baumgarn	515-281-8992
Missouri	
Bob Hentges	314-751-3241
Nebraska	
Ken Hassler	401-471-2186

Region VIII

EPA	
Bob Burm	303-837-4901

Region V

EPA	
Gary Milburn	312-353-2098
Illinois	
Dan Umfleet	217-782-0610
Indiana	
Denny Clark	317-633-0799
Michigan	
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Minnesota	
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Missouri	
Bob Hentges	314-751-3241
Nebraska	
Ken Hassler	401-471-2186

Region VIII

EPA
Bob Burm 303-837-4901

Region IX

EPA
Tom Kramer
Mike Muse 415-556-3451
Lily Wong

California
Art Coe (9) 714-265-5114
Richard Condit (2) 415-461-1250
John Huddleston (HQ) 916-322-0211
Bill Leonard (3) 805-549-3147
Lew Schinazi (4) 213-620-4460

Region X

EPA
Ken Mosbaugh 206-442-1270

ADEM

ALABAMA
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT



NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERMITTEE: **ALABAMA POWER COMPANY
BARRY STEAM PLANT**

FACILITY LOCATION: **U. S. HIGHWAY 43
BUCKS, ALABAMA**

PERMIT NUMBER: **AL0002879**

RECEIVING WATERS: **Mobile River and Unnamed Tributary (Discharge Canal)
to Mobile River**

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§ 1251-1378 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-11 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§ 22-22-14 to 22-22-15, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the abovesigned receiving waters.

ISSUANCE DATE: **SEPTEMBER 28, 1990**

EFFECTIVE DATE: **NOVEMBER 1, 1990**

EXPIRATION DATE: **OCTOBER 31, 1995**

A handwritten signature in cursive script, reading "Leigh Rogers", is written over a horizontal line.
Alabama Department of Environmental Management

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PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN001: Once through condenser cooling water

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	monitor	Daily	Totalizer or Pump Log
Discharge Temperature	-	monitor	Daily	Grab or Recorder
Intake Temperature***	-	monitor	Daily	Grab or Recorder
Total Residual Chlorine****	-	0.04 mg/l	Daily	Grab
Time of Chlorine Addition	-	120 min/unit/day	Daily	Clock

Should the review of the 316(a) demonstration show that different or additional thermal limitations are necessary, this permit shall be modified to reflect such limitations.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3.

**Samples collected to comply with the monitoring requirements specified above except intake temperature shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***Samples to be taken at intake pump station.

****Total residual chlorine may not be added from any single generating unit for more than two hours per day unless the discharge demonstrates to ADEM that discharge for more than two hours is required for macroinvertebrate control. Total residual chlorine limitations apply at the outlet to the individual unit being chlorinated, prior to combining with any other waste stream or entering the receiving water. When chlorination is occurring, grab samples shall be taken at least every 30 minutes to verify compliance with total residual chlorine limitations. Simultaneous multi-unit chlorination is permitted. Sampling is required only during chlorination.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN002: Ash pond

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	monitor	1/month	Instantaneous
pH	6.0 s.u.	9.0 s.u.	1/month	Grab
Oil and Grease	-	13 mg/l	1/month	Grab
Total Suspended Solids	-	62 mg/l	1/month	24-Hr. Composite

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

*See Part II, A., 4; Part II, A., 5; and Part II, B., 3. Where fewer than two samples per month are taken the monthly average limit shall apply to the sample result in assessing compliance.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***To be monitored when metal cleaning wastewaters have been discharged to the ash pond during this time period. Sample should be collected within 30 days after metal cleaning wastewaters were discharged.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN003: Sanitary wastewater treatment plant discharged to the ash pond

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	monitor	1/month	Instantaneous

The sanitary wastewater treatment plant discharge shall be chlorinated so as to limit fecal coliform growth from occurring in the ash pond.

The plant and its associated discharge shall be observed at least daily to determine if it is operating efficiently, and a log shall be kept as a record of these daily observations. In addition, major operational items shall be checked daily, and a log maintained of these checks. The logs shall include the date of observation, inspection person, comments on the plants operation, and steps taken to correct any operational problems. The log shall be made available during on-site inspections by ADEM and/or EPA.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN007: Metal cleaning wastes****

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements** Measurement Frequency	Sample Type
	Daily Minimum	Daily Maximum	Monthly Average	
Flow (MGD)	-	monitor	monitor	Pump Log or Instantaneous Grab
pH	6.0 s.u.	10.5 s.u.	-	Composite*****
Copper, Dissolved	-	***	***	Composite*****
Iron, Dissolved	-	***	***	Composite*****

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the monthly average limit shall apply to the sample result in assessing compliance.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***The limitations shall be 1.0 mg/l of dissolved copper and 1.0 mg/l of dissolved iron multiplied times the quantity of metal cleaning wastes produced. Monitoring shall be of the concentration of average dissolved copper and average dissolved iron in the effluent prior to discharge to the ash pond multiplied times the total quantity of wastes treated. See Part IV.A.14 for other requirements.

****Metal cleaning wastes means any wastewater resulting from cleaning as defined and interpreted by the U.S. Environmental Protection Agency in 40 CFR 423 and 45 FR 52297. No monitoring is required if wastewater is rainwater only. To qualify as rainwater all metal cleaning waste must be removed from the boiler cleaning pond, and only rainwater discharged to, or collected in the pond.

*****Sample shall be taken using equal volume aliquots taken at 15 minute intervals over the time of discharge.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN008: I.D. fan cooling water, units 1 and 2 and stormwater runoff

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	monitor	1/month	Estimate
Oil and Grease	-	20.0 mg/l	1/month	Grab
Temperature	-	100°F	1/month	Grab

Limitations and monitoring requirements are not applicable if this discharge is routed to the ash pond.

See Part IV A. of this permit for additional requirements relating to this discharge.

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the monthly average limit shall apply to the sample result in assessing compliance.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

DSN010: Stormwater runoff from switchyard

Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations*</u>		<u>Monitoring Requirements**</u>	
	<u>Daily Minimum</u>	<u>Daily Maximum</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

See Part IV.A. of this permit for additional requirements relating to this discharge.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) outfall(s)), described more fully in the permittee's application:

- DSN011: Units 1, 2, and 3 intake screen backwash water
DSN012: Units 4 and 5 intake screen backwash water

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

This discharge is permitted with no monitoring requirements or limitations, provided the permittee adds no pollutants to the discharge.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge stormwater from diked petroleum storage or handling areas, provided the following conditions are met:

Such discharge shall be limited and monitored by the permittee as specified below:

1. The facility will have a valid SPCC Plan pursuant to 40 CFR 112, and
2. Best Management Practices (BMP) are used in draining the diked area. BMP is defined as use of a portable oil skimmer or similar device or the use of absorbent material to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.
3. Monitoring records shall be maintained in the form of a log and shall contain the following information, as a minimum:
 - a. Date and time of discharge
 - b. Estimated volume of discharge
 - c. Initials of person making visual inspection and authorizing discharge
 - d. Observed conditions of stormwater discharged

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit.

2. Test Procedures

Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to Section 304(h) of the FWPCA, U.S.C. Section 1314(h). If more than one method for analysis of a substance is approved for use, a method having a detection limit lower than the permit limit shall be used. If the detection limit of all methods is higher than the permit limit the method having the lowest detection limit shall be used and a report of less than detection limit shall constitute compliance, however should EPA approve a method with a lower detection limit during the term of this permit the permittee shall use the newly approved method.

3. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The facility name and location, point source number, date, time and exact place of sampling;
- b. The name(s) of person(s) who obtained the samples or measurements;
- c. The dates and times the analyses were performed;
- d. The name(s) of the person(s) who performed the analyses;
- e. The analytical techniques or methods used, including source of method and method number; and
- f. The results of all required analyses.

4. Records Retention and Production

- a. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph.

- b. All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection.

5. Reporting

- a. Monitoring results obtained during the previous [QUARTERLY] reporting period shall be summarized on a Discharge Monitoring Report (DMR) Form approved by the Department, and received by the Director no later than the 28th day of the month following this monitoring period. The first report is due **JANUARY 28, 1991**. If the permittee, using approved analytical methods as specified in Part I., B., 2., monitors any discharge from a point source identified in Part I., A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR Form and the increased frequency shall be indicated on the DMR Form. In the event no discharge from a point source identified in Part I., A. of this permit and described more fully in the permittee's application occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR Form.
- b. All reports and forms required to be submitted by this permit, the AWPCA and the Department's rules and regulations, shall be signed by "responsible official" of the permittee as defined in ADEM Admin. Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Admin. Code Rule 335-6-6-.09 and shall bear the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

- c. All reports and forms required to be submitted by this permit, the AWPCA and the Department's rules and regulations, shall be addressed to:

Director
Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, Alabama 36130
Attention: Industrial Branch, Water Division

6. Noncompliance Notification

- a. If for any reason, the permittee's discharge (1) does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Part I., A. of this permit which is denoted by an "(X)", (2) threatens human health or welfare, fish or aquatic life, or water quality standards, (3) does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), (4) contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4), or (5) exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass or upset, the permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24-hours after the permittee becomes aware of the occurrence of such discharge. In addition to the oral report, the permittee shall submit to the Director a written report as provided in c. below, no later than five (5) days after becoming aware of the occurrence of such discharge.
- b. If for any reason, the permittee's discharge does not comply with any limitation of this permit, the permittee shall submit to the Director a written report as provided in c. below, which report shall be submitted with the next Discharge Monitoring Report required to be submitted by Part I., B., 5. of this permit after becoming aware of the occurrence of such noncompliance.
- c. Any written report required to be submitted to the Director by a. or b. shall include the following information:
 1. A description of the discharge and cause of noncompliance;
 2. The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
 3. A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

7. Reduction, Suspension, or Termination of Monitoring and/or Reporting

- a. The Director may, with respect to any point source identified in Part I., A. of this permit, authorize the permittee to reduce, suspend or terminate the monitoring and/or reporting required by this permit upon the submission of a written request for such reduction, suspension or termination by the permittee, supported by sufficient data which demonstrates to the satisfaction of the Director that the discharge from such point source will continuously meet the discharge limitations specified in Part I., A. of this permit.
- b. It remains the responsibility of the permittee to comply with the monitoring and reporting requirements of this permit until written authorization to reduce, suspend or terminate such monitoring and/or reporting is received by the permittee from the Director.

C. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the discharge limitations specified in Part I., A. in accordance with the following schedule:

Operational Level Attained - - Effective Date of Permit

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

D. TERMINATION OF DISCHARGE

The permittee shall notify the Director, in writing, when all discharges from any point source(s) identified in Part I., A. of this permit have permanently ceased. This notification shall serve as sufficient cause for instituting procedures for termination of the permit.

PART II

A. MANAGEMENT REQUIREMENTS

1. Facilities Operation and Management

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices

- a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization.

- b. The permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 C.F.R. Section 112.1-7 if required thereby.
- c. The permittee shall prepare, submit for approval and implement a Best Management Practices (BMP) Plan for containment of any or all process liquids or solids, in a manner such that these materials do not present a significant potential for discharge, if so required by the Director or his designee. When submitted and approved, the BMP Plan shall become a part of this permit and all requirements of the BMP Plan shall become requirements of this permit.

3. Duty to Mitigate

The permittee shall promptly take all reasonable steps to mitigate and minimize any adverse impact to waters resulting from noncompliance with any discharge limitation specified in Part I., A. of this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

4. Bypass

- a. Any bypass is prohibited except as provided in b. and c. below:
- b. A bypass is not prohibited if:
 - (1) It does not cause any discharge limitation specified in Part I., A. of this permit to be exceeded; and
 - (2) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system.
- c. A bypass is not prohibited and need not meet the discharge limitations specified in Part I., A. of this permit if:
 - (1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;
 - (2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and
 - (3) The permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the permittee is granted such authorization, and the permittee complies with any conditions imposed by the Director to minimize any adverse impact to waters resulting from the bypass.
- d. The permittee has the burden of establishing that each of the conditions of b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Part I., A. of this permit.

5. Upset

- a. A discharge which results from an upset need not meet the discharge limitations specified in Part I., A., of this permit if:
 1. No later than 24-hours after becoming aware of the occurrence of the upset, the permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and
 2. No later than five (5) days after becoming aware of the occurrence of the upset, the permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that (i) an upset occurred; (ii) the permittee can identify the specific cause(s) of the upset; (iii) the permittee's facility was being properly operated at the time of the upset; and (iv) the permittee promptly took all reasonable steps to minimize any adverse impact to waters resulting from the upset.
- b. The permittee has the burden of establishing that each of the conditions of a. have been met to qualify for an exemption from the discharge limitations specified in Part I., A. of this permit.

6. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of wastewaters shall be disposed of in a manner that complies with all applicable Department Rules and Regulations.

7. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facility, including but not limited to the loss or failure of the primary source of power of the treatment facility, the permittee shall, where necessary to maintain compliance with the discharge limitations specified in Part I., A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored.

B. RESPONSIBILITIES

1. Duty to Comply

- a. The permittee must comply with all conditions of the permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for enforcement action, for permit termination, revocation and reissuance, suspension, modification; or denial of a permit renewal application.
- b. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the FWPCA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

- c. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a permittee in an enforcement action.
 - d. The discharge of wastewater from a source not specifically identified in the permit application for this permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.
2. Change in Discharge
- a. The permittee shall apply for a permit modification at least 180 days in advance of any facility expansion, production increase, process change, or other action that could result in the discharge of additional pollutants or increase the quantity of a discharged pollutant such that existing permit limitations would be exceeded or that could result in an additional discharge point. This requirement applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has authorized it by issuance of a permit modification where applicable, or a reissued permit.
 - b. The permittee shall notify the Director as soon as they know or have reason to believe:
 - (1) That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:
 - (a) one hundred micrograms per liter;
 - (b) two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter for antimony;
 - (c) five times the maximum concentration value reported for that pollutant in the permit application; or
 - (2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:
 - (a) five hundred micrograms per liter;
 - (b) one milligram per liter for antimony;
 - (c) ten times the maximum concentration value reported for that pollutant in the permit application.

3. Compliance with Toxic Pollutant Effluent Standard or Prohibition

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the permittee and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Part I., A. of this permit, or controls a pollutant not limited in Part I., A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition and the permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the authorization to discharge in this permit shall be void to the extent that any discharge limitation on such pollutant in Part I., A. of this permit exceeds or is inconsistent with the established toxic pollutant effluent standard or prohibition.

4. Compliance with Water Quality Standards and Other Provisions

- a. On the basis of the permittee's application, plans, or other available information, the Department has determined that compliance with the terms and conditions of this permit will assure compliance with the applicable water quality standards.
- b. Compliance with permit terms and conditions notwithstanding, if the permittee's discharge(s) from point sources identified in Part I., A. of this permit cause or contribute to a condition in contravention of State water quality standards, the Department may require abatement action to be taken by the permittee in emergency situations or modify the permit pursuant to the Department's rules and regulations, or both.
- c. If the Department determines, on the basis of a notice provided pursuant to Part II., B., 2. of this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the State or FWPCA, the Department may require such modification and, in cases of emergency, the Director may prohibit the act until the permit has been modified.

5. Right of Entry and Inspection

The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:

- a. enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
- b. have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;
- c. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

- d. sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

6. Updating Information

- a. The permittee shall inform the Director of any change in the permittee's mailing address or telephone number or in the permittee's designation of a facility contact or office(s) having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's rules and regulations and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the permittee shall furnish the Director with an update of any information provided in the permit application.
- b. If the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission.

7. Permit Modification, Suspension, Termination and Revocation

- a. This permit may be modified, suspended, terminated or revoked and reissued, in whole or in part, during its term for cause, including but not limited to, the following:
 - (1) Violation of any term or condition of this permit;
 - (2) Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
 - (3) Materially false or inaccurate statements or information in the permit application or the permit;
 - (4) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;
 - (5) Errors in calculation of discharge limitations or typographical or clerical errors;
 - (6) The permittee's discharge threatens human life or welfare;
 - (7) Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge; or
 - (8) Any other cause allowed by the ADEM Administrative Code, Chapter 335-6-6.
- b. The filing of a request by the permittee for modification, suspension or revocation of this permit, in whole or in part, does not stay any permit term or condition.

8. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying, suspending, or revoking this permit, in whole or in part, or to determine compliance with this permit.

9. Transfer of Permit

This permit may not be transferred or the name of the permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit. In the case of a change in name, ownership or control of the permittee's premises only, a request for permit modification in a format acceptable to the Director is required at least 30 days prior to the change. In the case of a change in name, ownership or control of the permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete permit application is required to be submitted to the Director at least 180 days prior to the change. Whenever the Director is notified of a change in name, ownership or control, he may require the submission of a new permit application.

10. Duty to Reapply

- a. If the permittee intends to continue to discharge beyond the expiration date of this permit, the permittee shall file a complete permit application for reissuance of this permit at least 180 days prior to its expiration.
- b. Failure of the permittee to apply for reissuance at least 180 days prior to permit expiration will void the automatic continuation of the expiring permit provided by ADEM Administrative Code Rule 335-6-6-.06.

11. Groundwater

Unless specifically authorized in Part I of this permit, this permit does not authorize any discharge to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem and the Director may require that the permittee undertake measures to abate any such discharge and/or contamination.

12. Discharge of Wastewater Generated by Others

The discharge of wastewater, generated by any process, facility, or by any other means not under the operational control of the permittee and not identified in the application for this permit and not identified specifically in the description of an outfall in this permit is not authorized by this permit.

13. Cooling Water Additives

- (a) The company shall notify the Director in writing not later than sixty (60) days prior to instituting use of any biocide corrosion inhibitor or chemical additive used in a cooling system, not identified in the application for this permit, from which discharge is allowed by this permit. Such notification shall include:

- (1) name and general composition of biocide or chemical,
 - (2) 96-hour median tolerance limit data for organisms representative of the biota of the waterway into which the discharge will ultimately reach,
 - (3) quantities to be used,
 - (4) frequencies of use,
 - (5) proposed discharge concentrations, and
 - (6) EPA registration number, if applicable.
- (b) unless previously approved or permitted for specific discharge points, the use of biocide containing tributyl tin, tributyl tin oxide, zinc, chromium or related compounds in cooling system(s) regulated by this permit is prohibited. The use of any additive not identified in this permit prior to a determination by the Department that permit modification to control discharge of the additive is not required or prior to issuance of a permit modification controlling discharge of the additive is prohibited.

PART III

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished as provided by applicable State and Federal law.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA as such any terms, conditions, or limitations of the permit are enforceable under State and Federal law.

b. Any person required to have a NPDES permit pursuant to this Chapter and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates this Chapter or applicable orders of the Department or any applicable rule or standard under this Division, is subject to any one or combination of the following enforcement actions under the AWPCA.

- (1) An administrative order requiring abatement compliance, mitigation, cessation, clean-up, and/or penalties;
- (2) An action for damages;

- (3) An action for injunctive relief; or
- (4) An action for penalties.
- c. Any order issued by the Department pursuant to the AWPCA requiring compliance with the AWPCA, its implementing rules, or an NPDES Permit shall specify a reasonable time within which noncompliance must cease. In appropriate cases a reasonable time may be immediately. Reasonableness shall be determined based upon the severity of the violation and the complexity and availability of the measures necessary to correct this violation.
- d. If the permittee is not in compliance with the conditions of an expiring or expired permit the Director may choose to do any or all of the following provided the permittee has made a timely application for reissuance of the permit.
 - (1) initiate enforcement action based upon the permit which has been continued;
 - (2) issue a notice of intent to deny the permit reissuance. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;
 - (3) reissue the new permit with appropriate conditions; or
 - (4) take other actions authorized by these rules and the AWPCA.

4. Relief From Liability

Except as provided in Part II., A., 4. (Bypass) and Part II., A., 5. (Upset), nothing in this permit shall be construed to relieve the permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion or other private rights, or any infringement of Federal, State, or local laws or regulations, nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the State or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential. Knowingly making any false statement in any such report may result in the imposition of criminal penalties as provided for in Section 309 of the FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

E. DEFINITIONS

1. Average monthly discharge limitation - means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured).
2. Average weekly discharge limitation - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured).
3. Bypass - means the intentional diversion of waste streams from any portion of a treatment facility.
4. Daily discharge - means the discharge of a pollutant measured during any consecutive 24 hour period in accordance with the sample type and analytical methodology specified by the discharge permit.
5. Daily maximum - means the highest value of any individual sample result obtained during a day.
6. Daily minimum - means the lowest value of any individual sample result obtained during a day.
7. Day - means any consecutive 24-hour period.
8. Department - means the Alabama Department of Environmental Management.
9. Director - means the Director of the Department.
10. Discharge - means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other waste into waters of the state." Code of Alabama 1975, Section 22-22-1(b)(9).
11. Discharge monitoring report (DMR) - means the form approved by the Director to accomplish reporting requirements of an NPDES permit.
12. Permit application - means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.

13. Point Source - means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, . . . from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).
14. Pollutant - includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics, excluding flow, specified in Part I., A., of this permit.
15. Severe Property Damage - means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
16. Upset - means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate facilities, lack of preventive maintenance, or careless or improper operation.
17. Waters - means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the State, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.
18. Week - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

F. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

A. OTHER CONDITIONS

- 1) The permittee shall contact the Department within 24 hours of detecting a reportable spill, as defined under 40 CFR Part 112, SPCC Regulations, or 40 CFR Part 117, Hazardous Substances Regulations.
- 2) The permittee shall consult with or receive approval from the Director prior to disposal or storage of ash or ash products in locations or with methods not approved by the Department's Water Division, as of the effective date of this permit. This requirement shall not apply to selling of ash products, after they leave the permittee's possession.
- 3) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source. The permittee shall not combine various sources for treatment or discharge without prior approval by the Department.
- 4) The permittee shall operate and maintain barge loading and unloading facilities in such a manner so as to preclude spillage of coal, chemicals, etc., used at the facility, to the maximum extent possible, and shall take all actions necessary to clean up and control any such spill which may occur.
- 5) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
- 6) In addition to the requirements of Part I.B.5.A., the permittee shall submit with the quarterly monitoring reports, a tabulated summary of all permit limitation violations. This submittal shall be in a form acceptable to the Director.
- 7) There shall be no discharge of floating solids of visible foam in other than trace amounts from any surface water discharge allowed by this permit. The permittee shall report all visible discharges or observations of floating materials, such as fly ash, cenospheres, or oil sheens on the receiving stream, to the Department within 24 hours, or the next working day, whichever is sooner. Field data sheets shall have appropriate spaces to record observations.
- 8) The permittee shall not store coal, soil or other similar erodible materials in a manner in which runoff is uncontrolled, or conduct construction activities in a manner which produces uncontrolled runoff unless such runoff and practices have been specifically approved by the Department. 'Uncontrolled' shall mean, without sedimentation basins or other controls approved by the Department. This permit may be modified to include limitations for the discharge from such facilities when installed.
- 9) Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to water of the state is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. The discharge of chlorine is authorized in Part I of this permit.
- 10) The discharge of any hazardous wastes to any waste stream which ultimately discharges to waters of the state is prohibited, unless specifically authorized elsewhere in the permit.

OTHER CONDITIONS

- 11) The permittee shall survey all ash pond dikes and toe areas to assure that unauthorized seepage is not occurring. Not later than 30 days following the survey, the permittee shall certify that no seepage is occurring. In the event that seepage exists and has the potential to reach waters of the state, the permittee shall notify the Director within 30 days of becoming aware of the situation and provide a proposed course of corrective action and an implementation schedule.
- 12) Should the permittee wish a continuation of its 316(a) thermal variance beyond the term of this permit, reapplication for such continuation shall be submitted (in accordance with 40 CFR Part 125, Subpart H and with Section 122.21(1)(6) not later than 180 days prior to permit expiration. Reapplication shall include necessary technical data and relevant information to support a continuation of the variance.
- 13) The permittee shall provide an operating procedure for treatment of the metal cleaning wastes. The procedure shall be developed within 90 days of the effective date of the permit. The procedure shall provide pretreatment tanks to be included as a part of the treatment necessary to comply with the effluent limitations contained in Part I, Page I-1c of this permit. The permittee shall also notify the Department not less than 30 days before metal cleaning wastes are to be generated and discharged to the ash pond.
- 14) Not later than six months after the effective date of this permit, the permittee shall implement a study to quantify plant waste flows presented in the application within an accuracy of plus or minus 10 percent of actual flow. Report shall be submitted not later than two and three years following the effective date, and shall cover a period of 12 and 24 months, respectively. If flows are significantly different than provided in the application, the permit shall be modified to reflect the revised information.

In all cases where EPA Guidelines apply to the discharges discussed above, a best professional judgement has been made that best conventional treatment (BCT) is equal to best practical treatment (BPT).

EFFLUENT TOXICITY LIMITATIONS AND BIOMONITORING REQUIREMENTS

1. The permittee shall perform 48 hour acute screening bioassay tests using fathead minnows (*Pimephales promelas*) and *Daphnia pulex* on 100% of DSN002 effluent in accordance with Section 8 of the current edition of "EPA Methods for measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms".
2. The above biomonitoring tests will begin 90 days after the effective date of this permit and be performed once per 6 months through the expiration date of this permit. Biomonitoring results obtained during each period shall be summarized on the appropriate report form approved by the Department, and submitted no later than 28 days following the period. After completion of two (2) years of conducting biomonitoring and all tests pass the criteria, then the testing frequency shall be reduced to once per year.
3. During the initial four (4) testing periods, bioassays will be performed on each of a series of four (4) grab samples collected at six (6) hour intervals. Pending approval by the Department, a composite sample shall be obtained for use in biomonitoring tests for the remainder of the permit. Holding time for sample(s) shall not exceed 72 hours. An appropriate control water shall be selected by the permittee, but must be approved by the Department prior to use in the above testing.
4. If more than 10% of the test organisms die in the control water during the test, results shall not be reported, and the test shall be rerun unless any effluent concentration has less than 10% mortality of test organisms.
5. Should more than 50% of the test organisms die in 100% DSN002, the permittee shall perform that test at an accelerated frequency in accordance with the following requirements.
 - a. These additional biomonitoring tests shall begin within 10 days after failure of the scheduled test, and shall be performed one (1) per week for four (4) weeks. Biomonitoring tests results obtained during each month shall be summarized on the appropriate report form approved by the Department, and submitted no later than 28 days after the month in which the tests were performed.
 - b. After the test period is complete and all test data is received, the Department will review the data to determine if the DSN002 is acutely toxic. If more than 10% of the test organisms die in the control water during the test, results shall not be reported, and the test shall be rerun unless any effluent concentration has less than 10% mortality of test organisms.
6. If the Department determines DSN002 effluent to be acutely toxic the following will be required:
 - a. Part One of a Toxicity Reduction Evaluation (TRE) shall be required to be submitted for review by the Department within 45 days after the permittee receives notice that DSN002 effluent is considered acutely toxic. Following review of Part One of the TRE a schedule for submittal of Part Two will be established by the Department. Implementation of any corrective action required by the Part Two submittal shall be completed in accordance with the approved schedule contained in that submittal. Failure to comply with any requirement of the approved schedule shall be considered a permit violation.

- b. Accelerated biomonitoring tests as discussed in item 5. above will not be required during the period of TRE preparation.
- c. Following completion of the TRE and implementation of all required corrective action, the effluent limit for the biomonitoring tests required by item 1. above shall be less than 50% mortality.

7. Definitions

- a. Toxicity Reduction Evaluation (TRE) is defined as a plan to determine what actions will be required for complying with effluent toxicity limitations. The TRE plan is completed in two parts; 1) Determination of which control options are to be evaluated, and 2) Evaluation of these control options to determine which will be optimum for attaining compliance. The second phase of the TRE shall include a schedule for implementing the required actions.

ADEM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT



Guy Hunt
Governor

Leigh Pegues, Director

1751 Cong. W. L.
Dickinson Drive
Montgomery, AL
36130
205 / 271-7700

Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, Alabama 36130

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

Field Offices:

FACT SHEET/PERMIT RATIONALE

Unit 806, Building B
225 Oxmoor Circle
Birmingham, AL
35209
205 / 942-6168

P.O. Box 953
Decatur, AL
35602
205 / 353-1713

2204 Perimeter Road
Mobile, AL
36615
205 / 479-2336

PERMIT NUMBER AL0002879

FIRST ISSUANCE _____

DATE PREPARED March 14, 1990

REISSUANCE X

PREPARED BY Jim Moore

MODIFICATION _____

1. NAME AND MAILING ADDRESS OF PERMIT APPLICANT:

Alabama Power Company
Barry Steam Plant
P O Box 2641
Birmingham, AL 35291

2. LOCATION OF PROPOSED DISCHARGE(S)

Latitude 34° 00' 45"
Longitude 85° 58' 12"

U.S. Highway 43, North
Bucks, Alabama

3. DESCRIPTION OF RECEIVING WATER(S)

Mobile River and unnamed tributary (discharge Canal) to the Mobile River
Classified as Fish and Wildlife

4. DESCRIPTION OF ACTIVITY(S) GENERATING WASTEWATER

Generation of electricity from the steam produced from the burning of coal.

5. DESCRIPTION OF WASTEWATER AND PROPOSED LIMITATIONS

See attached permit application and draft permit

6. BASIS OF PERMIT REQUIREMENTS/PERMIT RATIONALE

See attached permit rationale

7. PROCEDURES FOR THE FORMULATION OF FINAL DETERMINATIONS

a. Comment Period

The Alabama Department of Environmental Management proposes to issue an NPDES permit to this applicant subject to the effluent limitations and special conditions outlined above. These determinations are tentative.

Interested persons are invited to submit written comments on the permit application or on proposed determinations to the following address:

Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, Alabama 36130
205/271-7700

All comments received prior to _____ will be considered in the formulation of final determinations with regard to this application.

b. Public Hearing

The Director will hold a public hearing if there is a significant degree of public interest in a proposed permit or group of permits. The Director may hold a public hearing if he determines that useful information and data may be obtained thereby. Public notice of such a hearing will be circulated at least thirty days prior to the hearing, in newspapers in the geographical area of the discharge and to those on the EPA mailing list.

c. Issuance of the Permit

After consideration of all written comments and requirements and policies in the Alabama Water Pollution Control Act Code of Alabama 1975, §§22-22-1 through 22-22-14 (1984 and 1987 Cum.Supp.) and the Alabama Environmental Management Act Code of Alabama 1975, §§22-22A-1 through 22-22A-16 (1984 and 1987 Cum.Supp.) and applicable Administrative Rules promulgated thereunder, and, if a public hearing is held, after consideration of all comments, statements and data presented at the hearing, the Director will prepare and make available to the public a response to comments. The Director will also make a final permit decision after consideration of all public comments.

The Director's final permit decision will be the final action of the Alabama Department of Environmental Management.

d. Adjudicatory Hearing

Any interested person adversely affected may submit a request for an adjudicatory hearing on the permit and its conditions within 15 days after notice to the aggrieved person by the Department of such action, or if no notice to the aggrieved person is given or required by the Alabama Environmental Management Act, Code of Alabama 1975, §§22-22A-1 through 22-22A-16, within 30 days of such action. A request for a hearing to contest an administrative action of the Department shall be made in accordance with ADEM Administrative Code Chapter 335-2-1, in writing and shall contain:

- (1) the name, mailing address, and telephone number of the person making the request;
- (2) a short and plain statement identifying the administrative action of the Department being contested;
- (3) a short and plain statement of the threatened or actual injury suffered by the requester as a result of the administrative action of the Department;
- (4) a short statement of the terms and conditions which the requester proposes that the Commission should include in an order modifying or disapproving the Department's administrative action;
- (5) the name, mailing address, and telephone number of the requester's attorney, if represented by an attorney.

A request for a hearing to contest an administrative action of the Department shall be filed with the Commission by delivering the same, either personally or by United States mail as certified mail, return receipt requested with instruction to the delivering postal employee to show to whom delivered, date of delivery, and address where delivered, to:

Chairman (or his designee)
Environmental Management Commission
c/o Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
Montgomery, AL 36130

Pending resolution of the hearing, the provisions of the permit remain effective and must be complied with unless a stay is applied for by the petitioner and granted by the Commission. The final Commission decision on the permit provisions contested at an adjudicatory hearing will be made in accordance with Commission Adjudicatory Hearing Rules.

(p served with final)

Prepared by: Jim Moore

NPDES NO. AL0002879

Draft Permit is:

Number _____

SIC: 4911

Discharge Serial Numbers & Descriptions: DSN001, 002, 003, 007, 008, 010,
011, 012

Discussion:

DSN001: ONCE THROUGH CONDENSER COOLING WATER FOR UNITS 1 AND 2.

0.04 mg/l daily maximum
120 min/unit/day daily maximum
monitor daily
***see below

As required by EPA Guidelines, the average total residual chlorine should be the average of analyses made over a single period of release which does not exceed two hours. Also, the facility is only allowed to discharge chlorine from any single generating unit for more than two hours per day unless the permittee has demonstrated that discharge for more than two hours is required for macroinvertebrate control. These limitations meet the requirements of the Federal Regulations.

In 1975, the permittee provided information to support their request that alternative thermal effluent limitations be imposed under Section 316(A) of the Clean Water Act. According to Department records, the 316(A) variance was received and certified to EPA for consideration. At the time this permit was drafted there had been no decision on the status of the 316(A) variance. This was also the case when the last permit was issued. The previous permit contained no limitations on effluent or instream temperature, and no limit is therefore proposed for this permit. A specific clause is included in this permit which will provide for reopening the permit to address the temperature standard if the water quality studies indicate such a need.

DSN002: ASH POND DISCHARGE

Limitations are required as promulgated in 40 CFR Part 423 for low volume wastes, fly ash and bottom ash transport waters, metal cleaning wastes, and coal pile runoff. Coal pile runoff directed to the ash pond will not be limited because this discharge only occurs during storm events. Limitations for total suspended solids (TSS) and oil and grease (O&G) are based on BPT and BAT. These limitations have been developed as follows:

Process Wastes to Ash Pond

Sources Dry Weather	Flows MGD	O&G				TSS			
		AVG		MAX		AVG		MAX	
		MGL	PPD	MGL	PPD	MGL	PPD	MGL	PPD
Ash Sluice	46.7	15	5842	20	7790	30	11684	100	38948
Building Sump	11.5	3.2	306	4.7	450	30	2887	100	9591
H2O Treatment	0.57	15	71	20	95	30	142	100	475
Sanitary	.05	1.0	-	1.5	1	30	12	45	18
Metal Cleaning	NA	-	-	-	-	-	-	-	-
Coal Pile H2O	NA	-	-	-	-	-	-	-	-
Total	58.8		6219		8336		14715		49032

It is ADEMs best professional judgement that BCT is equivalent to BPT for oil and grease and suspended solids. A BPJ has also been made that permit effluent limitations for this outfall are to be expressed as concentration rather than mass units.

For purposes of determining dry weather effluent limitations it is assumed that ash sluicing and metal cleaning do not occur simultaneously for any single unit, and that dry weather flow from coal pile runoff and other stormwater directed to the ash pond are negligible.

the flow weighted concentration is then calculated using the equation:

$$C_d = \text{SUM } Q_i C_i / \text{SUM } Q_i$$

which when rounded to the nearest integer yields:

Parameter	Daily Average mg/l	Daily Maximum mg/l
Oil and Grease	13.0	17.0
Total Suspended Solids	30.0	100.0

Under wet weather conditions, coal pile runoff can become significant, as does other surface runoff. The EPA "Guidance for Co-Treatment Facilities at Steam Electric Power Plants, August 22, 1985"; however, allows for the use of a single set of flow weighted concentration limits derived for dry weather conditions (not to exceed 30/100 mg/l for TSS and 15/20 mg/l for O&G), to be used for all weather conditions provided that the for life of the permit the treatment facility shall have available a minimum free water volume of at least the sum of:

- 1) The maximum dry weather plant waste flows to the ash pond over a 24-hour period.
- 2) Rainfall directly on the entire pond area (total area inside the dike) resulting from a 10 year, 24-hour rainfall event for the plant site.
- 3) All rainfall related flows (coal pile runoff, roof and yard drains, etc.) to the ash pond from the 10 year, 24-hour rainfall, using a runoff coefficient of 1.0.
- 4) The solids to be added to the sediment level of the ash pond during the term of the permit.

The permittee has provided the following information with their application:

Dry weather maximum plant flow	=	32.3 MGD
Runoff area	=	670 acres
10 year 24-hour rainfall intensity	=	8.5 inches
Runoff to the ash pond	=	10.4 MGD
Total ash pond influent	=	58.9 MGD
Solids to be added	=	48,000 lb/day
Ash pond capacity	=	293 mg

Based on the above information, the August 22, 1985 guidance is applicable to this facility.

In addition to maintaining the required volume in the ash pond, the guidance provides that additional monitoring of the ash pond effluent shall be performed whenever a rainfall event occurs which exceeds 25% of the 10 year 24-hour rainfall. For implementation of these conditions, see Part I, Page I-1c, and Part IV.A. of the permit.

Because this facility is considered a primary industry, effluent toxicity testing is required for DSN002. Acute definitive tests are required because this discharge does not receive a 100:1 or greater dilution with the Mobile River. Monitoring frequency is specified in the permit language.

DSN003:

TREATED SANITARY WASTEWATERS TO THE ASH POND

The permittee has eliminated and/or combined four treatment plants into one central facility which now handles all the sanitary wastewater at the plant. Because the treated wastewater is directed to the ash pond and sanitary wastes are classified as low volume wastes and because effluent limitations have been developed on a flow weighted value, no monitoring will be required for this discharge point. The only requirement will be that the treated wastewater be chlorinated to control fecal coliform and that the facility keep a written log on daily observations and maintenance at the treatment facility.

DSN007: METAL CLEANING WASTES TO THE ASH POND

40 CFR Part 423.13 for metal cleaning wastes is generally applicable to this type of discharge. The permittee has developed an equivalency study for treatment of metal cleaning wastes in the ash pond. These studies and demonstrations have been submitted to EPA through the Department, however, to date EPA has taken no action on the permittee's request for approval. When metal cleaning wastes are generated at the facility, current procedures call for neutralization of these wastes prior to introduction to the ash pond. In addition, the permittee is presently using organic acid based cleaning compounds which are not discharged but disposed of through incineration.

Based on the above and until such time as EPA makes a ruling on the equivalency demonstration, no limitations are included in this discharge for iron or manganese. Likewise, because the treated wastewater is directed to the ash pond and metal cleaning wastes are classified as low volume wastes and because effluent limitations have been developed on a flow weighted value for the ash pond, there are no limitations required for TSS and O&G. The permittee will be required to monitor for metals in the influent wastewaters and the effluent from the ash pond as further demonstration of no impact from this operating procedure. Such monitoring shall only be required when metal cleaning wastewater is or has been discharged to the ash pond in the last 30 days.

DSN008: I D FAN COOLING WATER FOR UNITS 1 and 2, AND STORMWATER

There are no changes proposed for these discharge points. Because of the potential for contamination of these wastewaters if a discharge occurs, effluent limitations applicable to this type of discharge and stormwater runoff have been assigned to these discharge points to ensure that water quality is protected.

DSN010: STORMWATER RUNOFF FROM THE SWITCHYARD

There are no discharge limitations proposed for these discharge points. The makeup of these discharges are noncontaminated stormwater. This is consistent with the previous permit and is in accordance with similar discharges from other plants. The permit includes language which prohibits discharge of visible oil, floating solids or foam.

The permittee has developed and has implemented a plan to prevent the discharge of oil and grease or other hydrocarbons. This plan is made by reference a part of this permit.

DSN011: UNITS 1, 2, AND 3 INTAKE SCREEN BACKWASH WATER

DSN012: UNITS 4 AND 5 INTAKE SCREEN BACKWASH WATER

There are no discharge limitations proposed for these discharge points. The makeup of these discharges are noncontaminated stormwater. This is consistent with the previous permit and is in accordance with similar discharges from other plants. The permit includes language which prohibits discharge of visible oil, floating solids or foam.

OTHER REQUIREMENTS

- 1) The permittee shall contact the Department within 24 hours of detecting a reportable spill, as defined under 40 CFR Part 112, SPCC Regulations, or 40 CFR Part 117, Hazardous Substances Regulations.
- 2) The permittee shall consult with or receive approval from the Director prior to disposal or storage of ash or ash products in locations or with methods not approved by the Department's Water Division, as of the effective date of this permit. This requirement shall not apply to selling of ash products, after they leave the permittee's possession.
- 3) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source. The permittee shall not combine various sources for treatment or discharge without prior approval by the Department.
- 4) The permittee shall operate and maintain barge loading and unloading facilities in such a manner so as to preclude spillage of coal, chemicals, etc., used at the facility, to the maximum extent possible, and shall take all actions necessary to clean up and control any such spill which may occur.
- 5) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
- 6) In addition to the requirements of Part I.B.5.A., the permittee shall submit with the quarterly monitoring reports, a tabulated summary of all permit limitation violations. This submittal shall be in a form acceptable to the Director.
- 7) There shall be no discharge of floating solids or visible foam in other than trace amounts from any surface water discharge allowed by this permit. The permittee shall report all visible discharges or observations of floating materials, such as fly ash, cenospheres, or oil sheens on the receiving stream, to the Department within 24 hours, or the next working day, whichever is sooner. Field data sheets shall have appropriate spaces to record observations.
- 8) The permittee shall verify the accuracy of instream and condenser cooling water thermal monitors at least twice annually and shall document such verification.

- 9) The permittee shall not store coal, soil or other similar erodible materials in a manner in which runoff is uncontrolled, or conduct construction activities in a manner which produces uncontrolled runoff unless such runoff and practices have been specifically approved by the Department. 'Uncontrolled' shall mean, without sedimentation basins or other controls approved by the Department. This permit may be modified to include limitations for the discharge from such facilities when installed.
- 10) Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to water of the state is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. The discharge of chlorine is authorized in Part I of this permit.
- 11) Beginning on the effective date of this permit and lasting until expiration, there shall be no discharge of plant wastes to the ash pond unless the permittee provides and maintains at all times a minimum free water volume (between the top of the sediment level and the minimum discharge elevation) equivalent to the sum of the maximum 24 hour plant discharges plus all direct rainfall and all runoff flows to the pond resulting from a 10 year 24-hour rainfall event, when using a coefficient of 1.0. During the term of this permit, the permittee shall remove settled material from the ponds or otherwise enlarge the available storage capacities in order to maintain the required minimum volumes at all times. Not later than January 1, 1991, and annually thereafter, the permittee shall determine and report to the Department (every two years physical measurements, on other years, calculated volumes are acceptable): A) the actual free water volume of the ash pond, B) physical measurements of the dimensions of the free water volume in sufficient detail to allow validation of the calculated volume, and C) a certification that the required volume is available with adequate safety factor to include all solids which will be deposited in the (active) ash pond(s) for the following year. Present information indicates a needed volume of 125 million gallons in addition to solids which will be deposited in the ash pond. Any changes to plant operations affecting such certification shall be reported to the Director within five days.
- 12) The discharge of any hazardous wastes to any waste stream which ultimately discharges to waters of the state is prohibited, unless specifically authorized elsewhere in the permit.
- 13) The permittee shall survey all ash pond dikes and toe areas to assure that unauthorized seepage is not occurring. Not later than 30 days following the survey, the permittee shall certify that no seepage is occurring. In the event that seepage exists and has the potential to reach waters of the state, the permittee shall notify the Director within 30 days of becoming aware of the situation and provide a proposed course of corrective action and an implementation schedule.

- 14) Should the permittee wish a continuation of its 316(a) thermal variance beyond the term of this permit, reapplication for such continuation shall be submitted (in accordance with 40 CFR Part 125, Subpart H and with Section 122.21(1)(6) not later than 180 days prior to permit expiration. Reapplication shall include necessary technical data and relevant information to support a continuation of the variance.
- 15) The permittee shall provide an operating procedure for treatment of the metal cleaning wastes. The procedure shall be developed within 90 days of the effective date of the permit. The procedure shall provide pretreatment tanks to be included as a part of the treatment necessary to comply with the effluent limitations contained in Part I, Page I-1c of this permit. The permittee shall also notify the Department not less than 30 days before metal cleaning wastes are to be generated and discharged to the ash pond.
- 16) Not later than six months after the effective date of this permit, the permittee shall implement a study to quantify plant waste flows presented in the application within an accuracy of plus or minus 10 percent of actual flow. Report shall be submitted not later than two and three years following the effective date, and shall cover a period of 12 and 24 months, respectively. If flows are significantly different than provided in the application, the permit shall be modified to reflect the revised information.

Added to
draft sent
to EPA
3/90

In all cases where EPA Guidelines apply to the discharges discussed above, a best professional judgement has been made that best conventional treatment (BCT) is equal to best practical treatment (BPT).

REVISED ADEM PERMIT RATIONALE

Date: September 27, 1990

Prepared by: Jim Moore

Name: Alabama Power Company - Barry Steam Plant

Location: Bucks, Alabama

NPDES NO. AL0002879

Draft Permit is:

First Issuance

Reissuance Due to Expiration

X

Modification of Existing Permit

Production Level (if guidelines used)

SIC: 4911

Discharge Serial Numbers & Descriptions: DSN001, 002, 003, 007, 008, 010,

011, 012

RECEIVING STREAM: Mobile River via Discharge Canal
7Q10 = 4200 CFS

Discussion:

This has been revised as a result of comments received from the permittee and informal recommendations from EPA. The changes made to the original draft permit reflect the Department's response to these comments. There were no comments received from the public during the notice period. The limitations and conditions of this permit satisfy all EPA requirements and ensure the protection of water quality standards.

This facility is regulated by 40 CFR Part 423, Steam Electric Power Generating Point Source Category. This permit is a reissuance of an existing NPDES permit issued by the Department in 1985. There have been no major changes to EPA Guidelines nor major changes in plant operations which impact decisions made during the previous issuance. The permittee has made minor changes in their wastewater treatment scheme by eliminating discharge points or redirecting wastewater so as to ensure better treatment before discharge. A discussion of how effluent limitations were developed are presented below for each outfall:

DSN001: ONCE THROUGH CONDENSER COOLING WATER FOR UNITS 1 AND 2

With the exception of temperature, all limitations are based on EPA Guidelines or Water Quality Standards.

BAT Chlorine, Total Residual
Time, Total Residual Discharge
Temperature, Intake
Temperature, Effluent0.04 mg/l daily maximum
120 min/unit/day daily maximum
monitor daily
***see below

The effluent limitation for residual chlorine is derived using the EPA Ambient Water Quality Criteria for chlorine and the 7Q10 low flow of 4200 cfs and back calculating and acceptable discharge limit for a simultaneous discharge from all generating units. While simultaneous chlorination of more than one unit during one period is not common procedure, it is possible. Therefore, the most conservative conditions shall apply for protection of water quality. This limit also assumes adequate mixing occurs instream. There are no diffusers provided for the discharge of cooling water as needed for thermal dispersion and it is the Department's judgement that the current disposal practices will also serve to disperse any pollutants such as chlorine so that water quality standards are protected.

As required by EPA Guidelines, the average total residual chlorine should be the average of analyses made over a single period of release which does not exceed two hours. Also, the facility is only allowed to discharge chlorine from any single generating unit for more than two hours per day unless the permittee has demonstrated that discharge for more than two hours is required for macroinvertebrate control. These limitations meet the requirements of the Federal Regulations.

In 1975, the permittee provided information to support their request that alternative thermal effluent limitations be imposed under Section 316(a) of the Clean Water Act. According to Department records, the 316(a) variance was received and certified to EPA for consideration. At the time this permit was drafted there had been no decision on the status of the 316(a) variance. This was also the case when the last permit was issued. The previous permit contained no limitations on effluent or instream temperature, and no limit is therefore proposed for this permit. A specific clause is included in this permit which will provide for reopening the permit to address the temperature standard if the water quality studies indicate such a need.

DSN002: ASH POND DISCHARGE

Limitations are required as promulgated in 40 CFR Part 423 for low volume wastes, fly ash and bottom ash transport waters, metal cleaning wastes, and coal pile runoff. Coal pile runoff directed to the ash pond will not be limited because this discharge only occurs during storm events. Limitations for total suspended solids (TSS) and oil and grease (O&G) are based on BPT and BAT. These limitations have been developed as follows:

Process Wastes to Ash Pond

Sources Dry Weather	Flows MGD	O&G				TSS			
		AVG		MAX		AVG		MAX	
		MGL	PPD	MGL	PPD	MGL	PPD	MGL	PPD
Ash Sluice	32.3	15	4042	20	5390	30	7930	100	26472
Building Sump	6.11	15	766	20	1020	30	1673	100	5578
H2O Treatment	0.57	15	71	20	95	30	155	100	475
Sanitary	.012	1.0	-	1.5	1	30	3	45	4.5
Dilution Flows	24.2	15	0	20	0	30	0	45	0
Coal Pile H2O	NA	-	-	-	-	-	-	-	-
	58.8		4879		6505		9761		32530

It is ADEMs best professional judgement that BCT is equivalent to BPT for oil and grease and suspended solids. A BPJ has also been made that permit effluent limitations for this outfall are to be expressed as concentration rather than mass units.

For purposes of determining dry weather effluent limitations it is assumed that ash sluicing and metal cleaning do not occur simultaneously for any single unit, and that dry weather flow from coal pile runoff and other stormwater directed to the ash pond are negligible.

The flow weighted concentration is then calculated using the equation:

$$C_d = \text{SUM } Q_i C_i / \text{SUM } Q_i$$

which when rounded to the nearest integer yields:

Parameter	Daily Average mg/l	Daily Maximum mg/l
Oil and Grease	9.0	13.0
Total Suspended Solids	19.0	62.0

Under wet weather conditions, coal pile runoff can become significant, as does other surface runoff. The EPA "Guidance for Co-Treatment Facilities at Steam Electric Power Plants, August 22, 1985"; however, allows for the use of a single set of flow weighted concentration limits derived for dry weather conditions (not to exceed 30/100 mg/l for TSS and 15/20 mg/l for O&G), to be used for all weather conditions provided that the for life of the permit the treatment facility shall have available a minimum free water volume of at least the sum of:

- 1) The maximum dry weather plant waste flows to the ash pond over a 24-hour period.
- 2) Rainfall directly on the entire pond area (total area inside the dike) resulting from a 10 year, 24-hour rainfall event for the plant site.
- 3) All rainfall related flows (coal pile runoff, roof and yard drains, etc.) to the ash pond from the 10 year, 24-hour rainfall, using a runoff coefficient of 1.0.
- 4) The solids to be added to the sediment level of the ash pond during the term of the permit.

The permittee has provided the following information with their application:

Dry weather maximum plant flow	=	32.3 MGD
Runoff area	=	670 acres
10 year 24-hour rainfall intensity	=	8.5 inches
Runoff to the ash pond	=	10.4 MGD
Total ash pond influent	=	58.9 MGD
Solids to be added	=	48,000 lb/day
Ash pond capacity	=	293 mg

Based on the above information, the August 22, 1985 guidance is applicable to this facility.

Because this facility is considered a primary industry, effluent toxicity testing is required for DSN002. Acute definitive tests are required because this discharge does not receive a 100:1 or greater dilution with the Mobile River. Monitoring frequency is specified in the permit language.

TREATED SANITARY WASTEWATERS TO THE ASH POND

The permittee has eliminated and/or combined four treatment plants into one central facility which now handles all the sanitary wastewater at the plant. Because the treated wastewater is directed to the ash pond and sanitary wastes are classified as low volume wastes and because effluent limitations have been developed on a flow weighted value, no monitoring will be required for this discharge point. The only requirement will be that the treated wastewater be chlorinated to control fecal coliform and that the facility keep a written log on daily observations and maintenance at the treatment facility. It is the Department's best engineering judgement that BOD5 and TSS limitations are not needed as internal monitoring points, since operational controls imposed by the permit and the final treatment provided are equivalent to secondary treatment requirements.

DSN007: METAL CLEANING WASTES TO THE ASH POND

40 CFR Part 423.13 for metal cleaning wastes is generally applicable to this type of discharge. The permittee has developed an equivalency study for treatment of metal cleaning wastes in the ash pond. These studies and demonstrations have been submitted to EPA through the Department. When metal cleaning wastes are generated at the facility, current procedures call for neutralization of these wastes prior to introduction to the ash pond. In addition, the permittee is presently using organic acid based cleaning compounds which are not discharged but disposed of through incineration.

Based on the above and based on an EPA ruling on the equivalency demonstration, no guideline limitations are included in this discharge for iron or manganese. Likewise, because the treated wastewater is directed to the ash pond and metal cleaning wastes are classified as low volume wastes and because effluent limitations have been developed on a flow weighted value for the ash pond, there are no limitations required for TSS and O&G. Based on EPA's review of the equivalency study the following requirements will be acceptable limitations: The limitations shall be 1.0 mg/l of dissolved copper and 1.0 mg/l of dissolved iron multiplied times the quantity of metal cleaning wastes produced. Monitoring shall be of the concentration of average dissolved copper and average dissolved iron in the effluent prior to discharge to the ash pond multiplied times the total quantity of wastes treated. The permittee will be required to monitor for metals in the effluent from the ash pond as further demonstration of no impact from this operating procedure. Such monitoring shall only be required when metal cleaning wastewater is or has been discharged to the ash pond in the last 30 days.

DSN008: I D FAN COOLING WATER FOR UNITS 1 and 2, AND STORMWATER

There are no changes proposed for these discharge points. Because of the potential for contamination of these wastewaters if a discharge occurs, effluent limitations applicable to this type of discharge and stormwater runoff have been assigned to these discharge points to ensure that water quality is protected.

DSN010: STORMWATER RUNOFF FROM THE SWITCHYARD

There are no discharge limitations proposed for these discharge points. The makeup of these discharges are noncontaminated stormwater. This is consistent with the previous permit and is in accordance with similar discharges from other plants. The permit includes language which prohibits discharge of visible oil, floating solids or foam.

The permittee has developed and has implemented a plan to prevent the discharge of oil and grease or other hydrocarbons. This plan is made by reference a part of this permit.

DSN011: UNITS 1, 2, AND 3 INTAKE SCREEN BACKWASH WATER

DSN012: UNITS 4 AND 5 INTAKE SCREEN BACKWASH WATER

There are no discharge limitations proposed for these discharge points. The makeup of these discharges are noncontaminated stormwater. This is consistent with the previous permit and is in accordance with similar discharges from other plants. The permit includes language which prohibits discharge of visible oil, floating solids or foam.

OTHER REQUIREMENTS

- 1) The permittee shall contact the Department within 24 hours of detecting a reportable spill, as defined under 40 CFR Part 112, SPCC Regulations, or 40 CFR Part 117, Hazardous Substances Regulations.
- 2) The permittee shall consult with or receive approval from the Director prior to disposal or storage of ash or ash products in locations or with methods not approved by the Department's Water Division, as of the effective date of this permit. This requirement shall not apply to selling of ash products, after they leave the permittee's possession.
- 3) In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source. The permittee shall not combine various sources for treatment or discharge without prior approval by the Department.
- 4) The permittee shall operate and maintain barge loading and unloading facilities in such a manner so as to preclude spillage of coal, chemicals, etc., used at the facility, to the maximum extent possible, and shall take all actions necessary to clean up and control any such spill which may occur.
- 5) There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
- 6) In addition to the requirements of Part I.B.5.A., the permittee shall submit with the quarterly monitoring reports, a tabulated summary of all permit limitation violations. This submittal shall be in a form acceptable to the Director.
- 7) There shall be no discharge of floating solids or visible foam in other than trace amounts from any surface water discharge allowed by this permit. The permittee shall report all visible discharges or observations of floating materials, such as fly ash, cenospheres, or oil sheens on the receiving stream, to the Department within 24 hours, or the next working day, whichever is sooner. Field data sheets shall have appropriate spaces to record observations.

- 8) The permittee shall not store coal, soil or other similar erodible materials in a manner in which runoff is uncontrolled, or conduct construction activities in a manner which produces uncontrolled runoff unless such runoff and practices have been specifically approved by the Department. 'Uncontrolled' shall mean, without sedimentation basins or other controls approved by the Department. This permit may be modified to include limitations for the discharge from such facilities when installed.
- 9) Discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to water of the state is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. The discharge of chlorine is authorized in Part I of this permit.
- 10) The discharge of any hazardous wastes to any waste stream which ultimately discharges to waters of the state is prohibited, unless specifically authorized elsewhere in the permit.
- 11) The permittee shall survey all ash pond dikes and toe areas to assure that unauthorized seepage is not occurring. Not later than 30 days following the survey, the permittee shall certify that no seepage is occurring. In the event that seepage exists and has the potential to reach waters of the state, the permittee shall notify the Director within 30 days of becoming aware of the situation and provide a proposed course of corrective action and an implementation schedule.
- 12) Should the permittee wish a continuation of its 316(a) thermal variance beyond the term of this permit, reapplication for such continuation shall be submitted (in accordance with 40 CFR Part 125, Subpart H and with Section 122.21(1)(6) not later than 180 days prior to permit expiration. Reapplication shall include necessary technical data and relevant information to support a continuation of the variance.
- 13) The permittee shall provide an operating procedure for treatment of the metal cleaning wastes. The procedure shall be developed within 90 days of the effective date of the permit. The procedure shall provide pretreatment tanks to be included as a part of the treatment necessary to comply with the effluent limitations contained in Part I, Page I-1c of this permit. The permittee shall also notify the Department not less than 30 days before metal cleaning wastes are to be generated and discharged to the ash pond.
- 14) Not later than six months after the effective date of this permit, the permittee shall implement a study to quantify plant waste flows presented in the application within an accuracy of plus or minus 10 percent of actual flow. Report shall be submitted not later than two and three years following the effective date, and shall cover a period of 12 and 24 months, respectively. If flows are significantly different than provided in the application, the permit shall be modified to reflect the revised information.

In all cases where EPA Guidelines apply to the discharges discussed above, a best professional judgement has been made that best conventional treatment (BCT) is equal to best practical treatment (BPT).

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In accordance with provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. §§1251 et seq.; the "Federal Act"), the Alabama Water Pollution Control Act, as amended, (Code of Alabama 1975, §§22-22-1 et seq.; the "State Act") and regulations adopted thereunder,

Alabama Power Company,
P.O. Box 2641
Birmingham, AL 35291

(hereinafter, "the permittee") is hereby authorized to discharge from a facility located at

Barry Steam Plant
U.S. Highway 43
Bucks, Alabama

to receiving waters named

Mobile River or unnamed tributary (discharge canal) to Mobile River

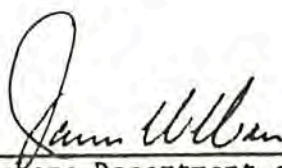
in accordance with effluent limitations, monitoring requirements and other conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on May 1, 1985

This permit and the authorization to discharge shall expire at midnight,
May 1, 1990

Issued on March 29, 1985

By:


Alabama Department of Environmental
Management

VOID

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge storm water from diked petroleum storage or handling areas, provided the following conditions are met:

Such discharges shall be limited and monitored by the permitted as specified below:

1. The facility will have a valid SPCC Plan pursuant to 40 CFR 112 and
2. Best Management Practices (BMP) are used in draining the diked area. BMP is defined as use of a portable oil skimmer or similar device or the use of absorbant material to remove oil and grease (as indicated by the presence of a sheen) immediately prior to draining.
3. Monitoring records shall be maintained in the form of a log and shall contain the following information, as a minimum:
 - a. Date and time of discharge
 - b. Estimated volume of discharge
 - c. Initials of person making visual inspection and authorizing discharge.
 - d. Observed conditions of storm water discharged.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN001: Once-through condenser cooling water*****

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	-	-	Daily	Totalizer or pump log
pH	N/A	s.u.	N/A	N/A	N/A
Discharge Temperature	-	-	-	Daily	Grab or Recorder
Intake Temperature***	-	-	-	Daily	Grab or Recorder
Total Residual Chlorine***	-	0.20 mg/l	0.20 mg/l	Daily	Grab
Time of chlorine discharge <i>add. in</i>	-	-	120 minutes	Daily	Clock

Should the review of the 316(a) demonstration show that different or additional thermal limitations are necessary, this permit shall be modified to reflect such limitations.

*See Part II., A., 4; Part II.A., 5; and Part II., B., 3.

**Samples collected to comply with the monitoring requirements specified above except intake temperature shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to ADEM that discharge for more than two hours is required for macro invertebrate control. Total residual chlorine limitations apply at the outlet to the individual unit being chlorinated, prior to combining with any other waste stream or entering the receiving water. When chlorination is occurring, grab samples shall be taken at least every 30 minutes to verify compliance with total residual chlorine limitations. Simultaneous multi-unit chlorination is permitted. Sampling is required only during chlorination.

****Samples to be taken at intake pump station.

No Cl₂ used

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN002: Ash Pond

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*		Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency Sample Type
Flow (MGD)	-	-	-	1/month Instantaneous
pH	6.0 s.u.	N/A	9.0s.u.	Daily Grab
Oil & Grease	-	15.0 mg/l	20.0 mg/l	1/month Grab
Total Suspended Solids	-	30.0 mg/l	100 mg/l	1/month 24-Hr. Composite

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken the daily average limit shall apply to the sample result in assessing compliance.

** Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application; DSN003: Coal handling sewage treatment plant, DSN004: Units 1-4 sewage treatment plant, DSN005: Unit 5 sewage treatment plant, DSN006: Warehouse sewage treatment plant.

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	-	-	1/month****	Instantaneous
pH	N/A	S.U.	N/A	N/A	Grab
Biochemical Oxygen Demand (5 day)	-	30 mg/l	45 mg/l	1/month****	Composite***
Total Suspended Solids	-	30 mg/l	45 mg/l	1/month****	Composite***
Fecal Coliform	-	300 ORG/100ml	300 ORG/100ml	1/month****	Grab

This sewage plant and its associated discharge shall be observed at least daily to determine if it is operating efficiently, and a log shall be kept as a record of these daily observations. In addition, major operational items shall be checked daily, and a log maintained of these checks. The logs shall include the date of observation, inspection person, comments on the plant's operation, and steps taken to correct any operational problems. The log shall be made available during on-site inspections by ADEM and/or EPA.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the daily average limit shall apply to the sample result in assessing compliance. Only fecal coliform limits apply if discharge is to the ash pond, if the permitted facility has an ash pond.

** Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location after treatment and prior to combination with any other wastewater. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***Over time of predominant discharge, but not less than from 7:00 a.m.-6:00 p.m. If manually composited, maximum time between individual aliquots is 2 hours.

****Monitoring frequency is 1/month or if discharge is to the ash pond.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN007: Metal Cleaning Wastes***

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	-	-	Daily	Pump Log or Instantaneous
pH	6.0 s.u.	N/A	9.0 s.u.	Daily	Grab
Oil & Grease	-	15.0 mg/l	20.0 mg/l	Daily	Grab
Total Suspended Solids	-	30.0 mg/l	100 mg/l	Daily	Composite****
(X) Copper, Total	-	1.0 mg/l	1.0 mg/l	Daily	Composite****
Iron, Total	-	1.0 mg/l	1.0 mg/l	Daily	Composite****

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the daily average limit shall apply to the sample result in assessing compliance.

**Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: If the permittee uses option III.H.1. at the nearest accessible point prior to discharge to the combination with other waste streams, and discharge to the boiler cleaning pond and after treatment. If the permittee uses options III.H.2. III.H.3. at the nearest accessible point after discharge from the metal cleaning pond and prior to combination with any other waste stream. If the permittee uses option III.H.4., at a point appropriate to the method used, and approved by the Department. Samples taken shall then be analyzed for the specified parameters in accordance with Part I.B.2.

***Metal cleaning wastes means any wastewater resulting from cleaning as defined and interpreted by the U.S. Environmental Protection Agency in 40 CFR 423 and 45. No monitoring is required if wastewater is rainwater only. To qualify as rainwater, all metal cleaning waste must be removed from the boiler cleaning pond, and only rainwater discharged to, or collected in, the pond.

****Sample shall be taken using equal volume aliquots taken at 15 minute intervals over the time of discharge.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN008: I.D. Fan Cooling Water, Units 1 and 2 and Storm water runoff and DSN009: I.D. Fan Cooling Water, Units 3 and 4, miscellaneous low volume cooling water and storm water runoff

Such discharge shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations*			Monitoring Requirements**	
	Daily Minimum	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow (MGD)	-	-	-	1/month***	Estimate
pH	N/A	S.U.	N/A	N/A	N/A
Oil & Grease	-	20 mg/l	20 mg/l	1/month***	Grab
Temperature	-	100°F	100°F	1/month***	Grab

See Part III.G. of this permit for additional requirements relating to this discharge.

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the daily average limit shall apply to the sample result in assessing compliance.

** Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment.

Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

***Samples shall be taken so as to be as representative as possible i.e., within two to three hours after a discharge caused by a rain event, begins.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application; DSN010: Storm water runoff from switchyard

Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations*</u>			<u>Monitoring Requirements**</u>	
	<u>Daily Minimum</u>	<u>Daily Average</u>	<u>Daily Maximum</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	-	-	-	N/A	N/A
pH	N/A s.u.	N/A	N/A s.u.	N/A	N/A

There shall be no discharge of visible oil, nor shall there be discharge of floating solids or visible foam except in trace amounts.

See Part III.G. of this permit for additional requirements relating to this discharge.

*See Part II., A., 4; Part II., A., 5; and Part II., B., 3. Where fewer than two samples per month are taken, the daily average limit shall apply to the sample result in assessing compliances.

** Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

PART I

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the permittee is authorized to discharge from the following point source(s) (outfalls(s)), described more fully in the permittee's application: DSN011: Units 1, 2, and 3 Intake screen back wash water and DSN012: Units 4 and 5 Intake screen back wash water.

Such discharge shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations*</u>			<u>Monitoring Requirements**</u>	
	<u>Daily Minimum</u>	<u>Daily Average</u>	<u>Daily Maximum</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Flow (MGD)	-	-	-	N/A	N/A
pH	N/A s.u.	N/A	N/A s.u.	N/A	N/A

This discharge is permitted with no monitoring requirements or limitations, provided the permittee adds no pollutants to the discharge.

* See Part II., A., 4; Part II., A., 5; and Part II., B., 3.

** Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge.
Samples taken shall then be analyzed for the specific parameters in accordance with Part I.B.2.

AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et. seq; the "Act"),

Alabama Power Company
600 North 18th Street
P.O. Box 2641
Birmingham, Alabama 35291

IN CORP. OFFICE :
205/323-5341

- ① TERRY ARNOLD - X2873
MAN. ENVIRONMENTAL SERVICE
- ② DENNIS COLE - X2202
MAN. PERMITS & ENV. SERV.
- ③ C.E. McLAINE - X2349
WATER PERMITS COOR.

is authorized to discharge from a facility located at

Barry Steam Plant
Bucks, Alabama

to receiving waters named Mobile River
from discharge points enumerated herein, as serial numbers 001, 002, 003, 004, 005,
006, 007, 008, 009, 010, and 011.

during the effective period of this permit

in accordance with effluent limitations, monitoring requirements and other
conditions set forth in Parts I, II, and III hereof.

This permit shall become effective on February 2, 1976.

This permit and the authorization to discharge shall expire at midnight,
February 2, 1981. Permittee shall not discharge after the above date
of expiration without prior authorization. In order to receive authorization
to discharge beyond the above date of expiration, the permittee shall submit
such information, forms, and fees as are required by the Agency authorized
to issue NPDES permits no later than 180 days prior to the above date of
expiration.

Signed this 17 day of December 1975.

John A. Ravan, Deputy
for Jack E. Ravan, Regional Administrator

VOID

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on effective date and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 001

- Once-through cooling water from Units 1, 2, 3, and 4

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	<u>Chlorination</u> <u>Period Average</u>	<u>Instantaneous</u> <u>Maximum</u>	<u>Measurement</u> <u>Frequency</u>	<u>Sample</u> <u>Type</u>
Flow-m ³ /Day (MGD)	N/A	N/A	Continuous	Recorder or pump logs
Discharge Temperature °C (°F)	N/A	N/A	Continuous	Recorder or Temp. logs
Intake Temperature °C (°F)	N/A	N/A	Continuous	Recorder or Temp. logs

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the nearest accessible point after final treatment but prior to discharge to or mixing with the receiving stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

Generating Unit

During the period beginning on effective date and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 001 - Once-through cooling water

from Unit 5
Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic

<u>Discharge Limitations</u>	
Chlorination	Instantaneous
Period Average	Maximum

Flow-m ³/Day (MCD)

Discharge Temperature °C(°F)

Intake Temperature °C(°F)

N/A	N/A
N/A	N/A
N/A	N/A

<u>Monitoring Requirements</u>	
Measurement Frequency	Sample Type

Continuous	Recorder or pump log
Continuous	Recorder or Temp. log
Continuous	Recorder or Temp. log

By September 30, 1977, the permittee shall submit a detailed implementation schedule to provide offstream cooling facilities in conformance with the requirements of Section 301 of the Act for review and approval by the Regional Administrator; and shall implement an approved schedule to assure that said facilities are complete and in operation no later than July 1, 1981.

However, notwithstanding the above requirement, the permittee may request a hearing in conformance with the provisions of Section 316(a) of the Act at any time prior to June 30, 1977. If at said hearing, the permittee can demonstrate to the satisfaction of the Regional Administrator that the thermal limitations as provided herein are more stringent than necessary to assure the protection and propagation of a balanced indigenous population of shellfish, fish and wildlife in and on the body of water into which the discharge is made, the Regional Administrator may impose an effluent limitation with respect to the thermal component of the discharge (taking into account the interaction of such thermal component with other pollutants) that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on that body of water. (See Part III.F.)

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): At the nearest accessible point after final treatment but prior to discharge to or mixing with the receiving stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 005* - Low Volume Waste Sources

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-m ³ /Day (MCD)	N/A	N/A	1/ 1/week	1/ Grab
Oil and Grease (mg/l)	15	20	1/week	Composite
Total Suspended Solids (mg/l)	30	100		

Low volume waste sources shall mean taken collectively as if from one source, waste water from all sources except those for which specific limitations are otherwise required in this permit, including, but not limited to waste waters from wet scrubber air pollution control systems, ion exchange water treatment systems, water treatment evaporator blowdown, laboratory and sampling streams, floor drainage, cooling tower basin cleaning wastes and blowdown from recirculating house service water systems.

Limitations and monitoring requirements do not apply if discharge is routed to the ash pond.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): discharge from the low volume wastewater treatment facility(s) prior to mixing with any other waste stream.

* Serial number assigned for monitoring purposes.

1/ Commensurate with treatment system instituted, but not less than 1/week.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on effective date and lasting through June 30, 1977 the permittee is authorized to discharge from outfall(s) serial number(s) 002 - Ash pond discharge

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow—m ³ /Day (MGD)	N/A	N/A	Daily	Calculations
Oil and Grease (mg/l)	N/A	N/A	1/month	Grab
Total Suspended Solids (mg/l)	N/A	N/A	1/month	Grab
Heavy Metals <u>1/</u>	N/A	N/A	1/month	Grab

1/ Monitoring for heavy metals shall include total arsenic, cadmium, chromium, copper, iron, lead mercury, nickel, selenium, zinc, and if oil fired, vanadium.

The pH shall not be less than N/A standard units nor greater than N/A standard units and shall be monitored 1/week by a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): discharge from ash pond prior to mixing with any other waste stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration of the permit is authorized to discharge from outfall(s) serial number(s) 002

- Ash Pond Discharge

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-m ³ /Day (MGD)	N/A	N/A	Continuous	Recorder
Oil and Grease (mg/l)	15	20	2/month	Grab
Total Suspended Solids (mg/l)	30	100	2/month	Grab
Heavy Metals	See Below		1/month	Grab

Monitoring for heavy metals shall include total arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, selenium, zinc and, if oil fired, vanadium.

PART I

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Permit No. AL0002879

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): discharge from ash pond prior to mixing with any other waste stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration 003 - Coal Handling Sewage
 the permittee is authorized to discharge from outfall(s) serial number(s) Treatment Plant Discharge

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirements		
	Organisms per 100 ml (Geometric mean)			Measurement Frequency	Sample Type	
	Daily Avg	Daily Max	Daily Max			
Flow-m ³ /Day (MGD)	N/A	N/A	N/A	1/month	during sampling	
BOD ₅	30	45	N/A	1/month	composite	
Total Suspended Solids	30	45	N/A	1/month	composite	
Fecal Coliform Bacteria	N/A	N/A	200	1/quarter	grab	
Total Residual Chlorine	N/A	N/A	N/A	1/week	grab	

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): sewage treatment plant discharge prior to mixing with any other waste stream.

Note: Where sewage treatment plant discharges to an ash pond measurement frequency shall be 1/quarter except chlorine which shall be 1/week.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration of the permit, the permittee is authorized to discharge from outfall(s) serial number(s) 004 - Coal Handling Sump Water

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>		<u>Monitoring Requirements</u>	
	Instantaneous Maximum (mg/l)		Measurement Frequency	Sample Type
Flow—m ³ /Day (MGD)	N/A	N/A	1/	1/
Total Suspended Solids (mg/l)	50		1/	1/

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
prior to discharge to or mixing with receiving stream.

1/ Commensurate with treatment system instituted, but not less than 1/week.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 006 - Units 1 - 4 Sewage Treatment Plant

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirements		
	Organisms per 100 ml (Geometric mean)			Measurement Frequency	Sample Type	
	Daily Avg	Daily Max	Daily Avg			
Flow-m ³ /Day (MGD)	N/A	N/A	N/A	1/month	during sampling	
BOD ₅	30	45	N/A	1/month	composite	
Total Suspended Solids	30	45	N/A	1/month	composite	
Fecal Coliform Bacteria	N/A	N/A	200	1/quarter	grab	
Total Residual Chlorine	N/A	N/A	N/A	1/week	grab	

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): sewage treatment plant discharge prior to mixing with any other waste stream.

Note: Where sewage treatment plant discharges to an ash pond measurement frequency shall be 1/quarter except chlorine which shall be 1/week.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration
the permittee is authorized to discharge from outfall(s) serial number(s) 007 - Unit 5 and Service Building
Sewage Treatment Plant

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations			Monitoring Requirements		
	Organisms per 100 ml (Geometric mean)			Measurement Frequency	Sample Type	
	Daily Avg	Daily Max	Daily Avg			
Flow-m ³ /Day (NCD)	N/A	N/A	N/A	1/month	during sampling	
BOD ₅	30	45	N/A	1/month	composite	
Total Suspended Solids	30	45	N/A	1/month	composite	
Fecal Coliform Bacteria	N/A	N/A	200	1/quarter	grab	
Total Residual Chlorine	N/A	N/A	N/A	1/week	grab	

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/month by a grab sample.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): sewage treatment plant discharge prior to mixing with any other waste stream.

Note: Where sewage treatment plant discharges to an ash pond measurement frequency shall be 1/quarter except chlorine which shall be 1/week.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 008 - Boiler Blowdown

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements		
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type	Calculations
Flow—m ³ /Day (MGD)	N/A	N/A	1/month		1/month
Oil and Grease (mg/l)	15	20	1/month	Grab	Grab
Total Suspended Solids (mg/l)	30	100	1/month	Grab	Grab
Copper, Total (mg/l)	1.0	1.0	1/month	Grab	Grab
Iron, Total (mg/l)	1.0	1.0	1/month	Grab	Grab

** Limitations and monitoring requirements for Total Suspended Solids and Oil and Grease do not apply if the discharge is routed to the ash pond after treatment has been provided to meet the iron and copper limitations.

The effluent limitations and monitoring requirements shown above will not apply if permittee, prior to December 31, 1976, submits evidence demonstrating that boiler blowdown wastes discharged to the ash pond receive treatment equivalent to chemical precipitation of iron and copper to 1 mg/l or less.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored commensurate with treatment system instituted, but not less than 1/week.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
prior to mixing with any other

waste stream.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977 and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 009 - Metal Cleaning Wastes

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent Characteristic	Discharge Limitations		Monitoring Requirements	
	Daily Average	Daily Maximum	Measurement Frequency	Sample Type
Flow-m ³ /Day (MGD)	N/A	N/A	1/day	Instantaneous
** Oil and Grease (mg/l)	15	20	1/week	Grab
** Total Suspended Solids (mg/l)	30	100	1/week	Composite
Copper, Total (mg/l)	1.0	1.0	1/week	Composite
Iron, Total (mg/l)	1.0	1.0	1/week	Composite

Metal cleaning wastes shall mean any cleaning compounds, rinse waters, or any other waterborne residues derived from cleaning any metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning and air preheater cleaning.

** Limitations and monitoring requirements for Total Suspended Solids and Oil and Grease do not apply if the discharge is routed to the ash pond after treatment has been provided to meet the iron and copper limitations.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored continuously or at a lesser frequency commensurate with treatment system instituted.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s):
discharge from the metal cleaning wastes treatment facility(s) prior to mixing with any other waste stream.

The effluent limitations and monitoring requirements shown above will not apply if permittee, prior to December 31, 1976, submits evidence demonstrating that chemical cleaning wastes discharged to the ash pond receive treatment equivalent to chemical precipitation of iron and copper to 1 mg/l or less.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning July 1, 1977, * and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 011 - Point source(s) runoff from construction

Such discharges shall be limited and monitored by the permittee as specified below:

<u>Effluent Characteristic</u>	<u>Discharge Limitations</u>	<u>Monitoring Requirements</u>	
	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow-m ³ /Day (MGD)	N/A	1/	1/
Total Suspended Solids (mg/l)	50 2/	1/	1/

Construction runoff shall include rainfall runoff discharged to navigable waters through any discernible, confined and/or discrete conveyance from any construction activity and any earth surface disturbed by such activity from the inception of any construction until construction is complete and disturbed earth is returned to a vegetative or other cover commensurate with the intended land use.

NOTE: The above limitations will not apply to the construction of ponds, levees, and dikes necessary to the construction of the physical-chemical waste treatment facility.

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/, 2/.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): prior to discharge to or mixing with the receiving stream.

- 1/ Frequency and sample type to be commensurate with the waste treatment system instituted, but not less than 1/week.
- 2/ Applicable to any flow up to the flow resulting from a 24-hour rainfall event with a probable recurrence interval of once in ten years. If an impoundment is utilized by permittee, it shall be capable of containing a 10-year, 24-hour rainfall event.

B. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the effluent limitations specified for discharges in accordance with the following schedule:

a. Chemical Waste Treatment (001, 002, 004, 008, 009, 010) ← 005 low Volu

- (1) Detailed implementation schedule - 3/31/76
- (2) Progress report - 9/30/76
- (3) Progress report - 3/31/77
- (4) Achieve operational level - 6/30/77

b. Off-stream cooling facilities for Unit 5 (001)

- *(1) Detailed implementation schedule - 9/30/77
- (2) Start construction - 12/31/77
- (3) Progress report - 7/1/78
- (4) Progress report - 3/31/79
- (5) Progress report - 12/31/79
- (6) Progress report - 9/30/80
- (7) Achieve operational level - 7/1/81

c. Start biological study - 3/31/76 (316a)

d. Biological report - 6/30/77 (316a & 316b)

e. Achieve operational level sewage treatment plant - 6/30/77 ← 003, 006, & 007

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

Note: Any construction of new waste treatment facilities or alterations to existing waste treatment facilities will require a permit or authorization for construction in accordance with applicable state law and regulations.

* These dates are included herein to alert the permittee to the requirements for off-stream cooling as set forth in 39, Federal Register, 36185-36212 (October 8, 1974). In the event that a final 316(a) determination has not been made by 9/30/77, submittal of the detailed implementation schedule will be delayed until such determination is made. Upon a final determination, permittee is required to submit a detailed implementation schedule within 90 days from the date of the determination. The start construction and progress report dates will be adjusted accordingly, however, the date for achievement of operational level, B.,1.,b.,(7), will not be affected.

C. MONITORING AND REPORTING**1. Representative Sampling**

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting

Monitoring results obtained during the previous 3 months shall be summarized for each month and reported on a Discharge Monitoring Report Form (EPA No. 3320-1), postmarked no later than the 28th day of the month following the completed reporting period. The first report is due on 3/31/76. Duplicate signed copies of these, and all other reports required herein, shall be submitted to the Regional Administrator and the State at the following addresses:

Regional Administrator
Environmental Protection Agency
1421 Peachtree Street, N.E.
Atlanta, Georgia 30309

AND Alabama Water Improvement Commission
3815 Interstate Court
Perry Hill Office Park
Montgomery, Alabama 36109

3. Definitions

- a. The "daily average" concentration means the arithmetic average (weighted by flow) of all the daily determinations of concentration made during a calendar month. Daily determinations of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the daily determination of concentration shall be the arithmetic average (weighted by flow) of all the samples collected during that calendar day.
- b. The "daily maximum" concentration means the daily determination of concentration for any calendar day.
- c. "Weighted by flow" means the summation of each sample concentration times its respective flow in convenient units divided by the summation of the flow values.
- d. "Nekton" means free swimming aquatic animals whether of freshwater or marine origin.
- e. For the purpose of this permit, a calendar day is defined as any 24-hour period.

4. *Test Procedures*

Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(g) of the Act, under which such procedures may be required.

5. *Recording of Results*

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. The exact place, date, and time of sampling;
- b. The dates the analyses were performed;
- c. The person(s) who performed the analyses;
- d. The analytical techniques or methods used; and
- e. The results of all required analyses.

6. *Additional Monitoring by Permittee*

If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report Form (EPA No. 3320-1). Such increased frequency shall also be indicated.

7. *Records Retention*

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Regional Administrator or the State water pollution control agency.

A. MANAGEMENT REQUIREMENTS

1. *Change in Discharge*

All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, production increases, or process modifications which will result in new, different, or increased discharges of pollutants must be reported by submission of a new NPDES application or, if such changes will not violate the effluent limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any pollutants not previously limited.

2. *Noncompliance Notification*

If, for any reason, the permittee does not comply with or will be unable to comply with any daily maximum effluent limitation specified in this permit, the permittee shall provide the Regional Administrator and the State with the following information, in writing, within five (5) days of becoming aware of such condition:

- a. A description of the discharge and cause of noncompliance; and
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

3. *Facilities Operation*

The permittee shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems installed or used by the permittee to achieve compliance with the terms and conditions of this permit.

4. *Adverse Impact*

The permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from noncompliance with any effluent limitations specified in this permit, including such accelerated or additional monitoring as necessary to determine the nature and impact of the noncomplying discharge.

5. *Bypassing*

Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited, except (i) where unavoidable to prevent loss of life or severe property damage, or (ii) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the effluent limitations and prohibitions of this permit. The permittee shall promptly notify the Regional Administrator and the State in writing of each such diversion or bypass.

6. *Removed Substances*

Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.

7. *Power Failures*

In order to maintain compliance with the effluent limitations and prohibitions of this permit, the permittee shall either:

- a. In accordance with the Schedule of Compliance contained in Part I, provide an alternative power source sufficient to operate the wastewater control facilities;
or, if such alternative power source is not in existence, and no date for its implementation appears in Part I,
- b. Halt, reduce or otherwise control production and/or all discharges upon the reduction, loss, or failure of the primary source of power to the wastewater control facilities.

B. RESPONSIBILITIES

1. *Right of Entry*

The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to sample any discharge of pollutants.

2. *Transfer of Ownership or Control*

In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

3. *Availability of Reports*

Except for data determined to be confidential under Section 308 of the Act, all reports prepared in accordance with the terms of this permit shall be available for public

inspection at the offices of the State water pollution control agency and the Regional Administrator. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

4. *Permit Modification*

After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

5. *Toxic Pollutants*

Notwithstanding Part II, B-4 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee so notified.

6. *Civil and Criminal Liability*

Except as provided in permit conditions on "Bypassing" (Part II, A-5) and "Power Failures" (Part II, A-7), nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.

7. *Oil and Hazardous Substance Liability*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

8. *State Laws*

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

9. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

10. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected hereby.

PART III

OTHER REQUIREMENTS

- A. In the event that waste streams from various sources are combined for treatment or discharge, the quantity of each pollutant or pollutant property attributable to each controlled waste source shall not exceed the specified limitation for that waste source.
- B. If the permittee, after monitoring for at least six months, determines that he is consistently meeting the effluent limits contained herein, the permittee may request of the Regional Administrator that the monitoring requirements be reduced to a lesser frequency or be eliminated.
- C. There shall be no discharge of polychlorinated byphenyl compounds such as those commonly used for transformer fluid.
- D. The company shall notify the Regional Administrator in writing not later than sixty (60) days prior to instituting use of any biocide or chemical used in cooling systems, including chlorine, which may be toxic to aquatic life other than those previously reported to the Environmental Protection Agency. Such notification shall include:
 1. Name and general composition of biocide or chemical.
 2. Quantities to be used.
 3. Frequency of use.
 4. Proposed discharge concentrations.
 5. EPA registration number.

F. Should permittee wish to pursue a demonstration pursuant to 316(a) of the Act, by 3/31/76 the permittee shall design; submit specific details for review, modification and approval (allow two months for approval) by the Regional Administrator; and implement approved studies to document the extent of thermal effects of the discharge on the indigenous population of shellfish, fish and wildlife in and on the receiving water body. Such study shall be in conformance with "Basic Guide to the Design of 316 Demonstration, Region IV, EPA (August 7, 1974)." The permittee shall submit, no later than 6/30/77. :

1. Data collected and a summary thereof;
2. An evaluation of such data; and
3. A discussion of how the study results and/or any other information prove that a lesser thermal effluent limitation than that provided in this permit will assure the protection and propagation of a balanced, indigenous population of fish, shellfish and wildlife in and on the receiving water body.

If the permittee fails to submit the above mentioned study plan by the indicated date, the Regional Administrator shall make a determination based on the data available. Within 90 days of notification of this determination, permittee shall submit an implementation schedule for the construction of off-stream cooling or other facilities as the determination shall require. Upon approval of the implementation schedule, the permittee shall expeditiously undertake construction in accordance with such schedule.

G. Gross effluent limitations provided herein may be applied on a net basis for any waste stream, if:

1. the permittee provides proof that the difference between net and gross application of the limitations is of major significance to the permittee in terms of the cost or technical feasibility of achieving the prescribed levels of treatment,
2. the pollutants discharged do not vary significantly, either chemically or biologically, from pollutants found in the applicant's water supply,
3. the net reporting is based on the level of pollutants present in such water after any water supply treatment steps are performed,
4. adequate intake and discharge monitoring is provided to assure statistical reliability of the net pollutant discharges, and
5. monitoring reports include both influent and effluent data.

Constr. R.O. ON 1/14

001

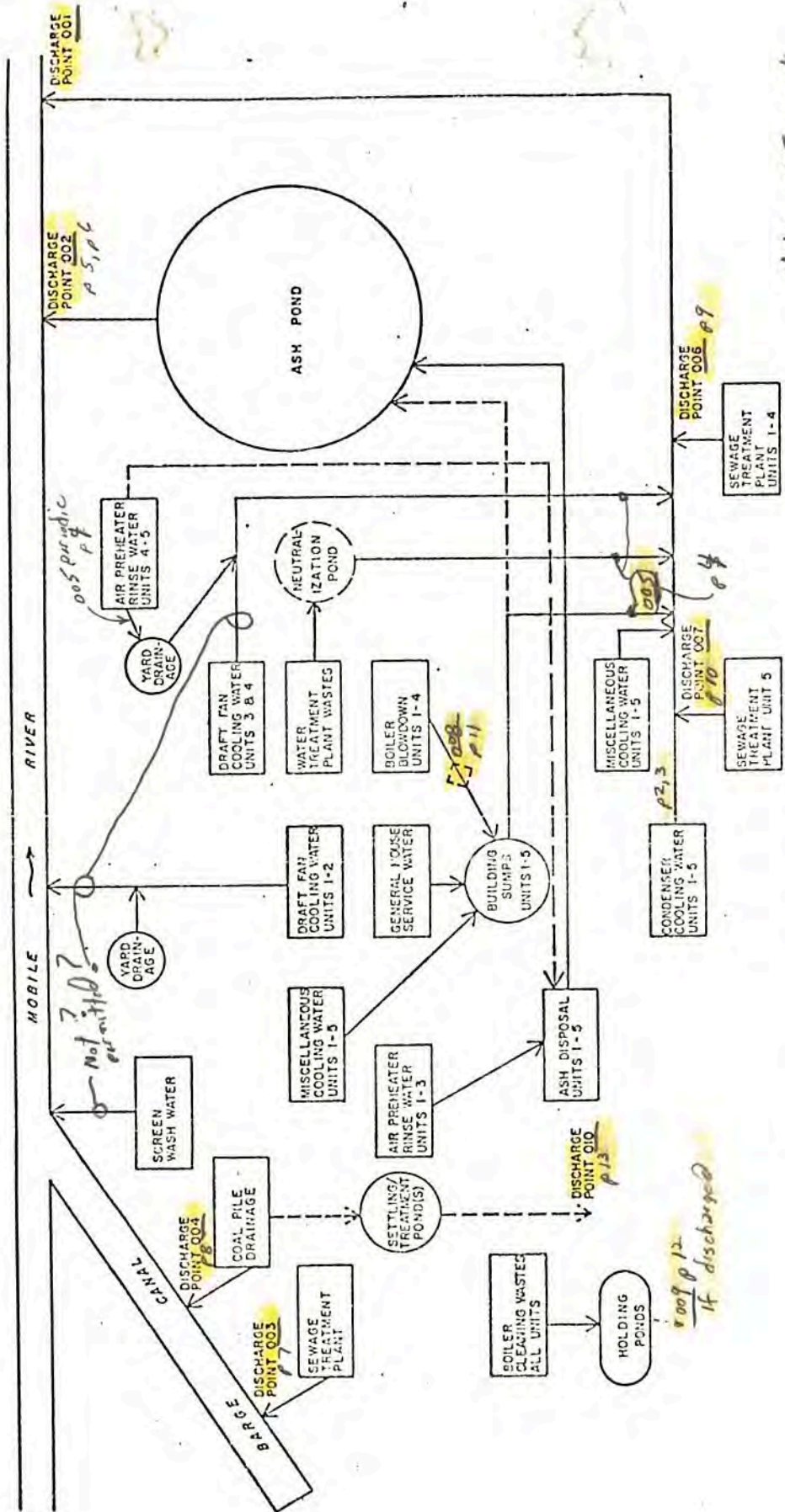
002

008

BARRY STEAM PLANT Waste Water Flow Diagram

004

003



Notes: 005 not included in I.S. but on p 4. 7/1/77 Compliance is required

MONITOR DISCHARGE FOR IRON & COPPER LIMITATIONS PRIOR TO COMBINING WITH ANY OTHER WASTE STREAM

REVISED 3/1/77

FIGURE 2



Karrie-Jo
Shell/R4/USEPA/US
06/09/2008 07:58 AM

To "Dean, Glenda" <GLD@adem.state.al.us>
cc "Marshall, Brian C" <BMarshall@adem.state.al.us>, "Sanderson, Eric" <ELS@adem.state.al.us>, Wayne Aronson/R4/USEPA/US@EPA, Mark Nuhfer/R4/USEPA/US@EPA, Paul Schwartz/R4/USEPA/US@EPA, Suzanne Rubini/R4/USEPA/US@EPA

bcc

Subject RE: your availability next week for another call re Barry draft permit

You can call us at 404 562-9319 at 3pm EST (2pm CST). We will be in our 15B conference room.

Karrie-Jo Robinson-Shell, P.E.

"Dean, Glenda" <GLD@adem.state.al.us>



"Dean, Glenda"
<GLD@adem.state.al.us>
06/05/2008 03:41 PM

To Karrie-Jo Shell/R4/USEPA/US@EPA
cc "Sanderson, Eric" <ELS@adem.state.al.us>, "Marshall, Brian C" <BMarshall@adem.state.al.us>
Subject RE: your availability next week for another call re Barry draft permit

KJ,

I'm trying to schedule Thursday, June 12th at 2:00 cst with the staff. What number do we reach you at?

Glenda L. Dean, Chief
NPDES Permit Branch
Water Division
gld@adem.state.al.us
334-270-5602
334-279-3051 (fax)


-----Original Message-----

From: Shell.Karrie-Jo@epamail.epa.gov
[mailto:Shell.Karrie-Jo@epamail.epa.gov]
Sent: Thursday, June 05, 2008 1:55 PM
To: Dean, Glenda
Cc: Sanderson, Eric; Marshall, Brian C
Subject: your availability next week for another call re Barry draft permit

Wayne and Paul (attorney) would like to have a short call with you to discuss the draft Barry permit. Our best times are:

Monday afternoon (11-2 CST)
Tuesday morning (9-10 CST)
Thursday (11-3 CST)

Please let me know what 30-45 minute slot of time is best for you during these periods.



Karrie-Jo
Shell/R4/USEPA/US
07/28/2008 01:34 PM

To els@adem.state.al.us
cc gld@adem.state.al.us, Paul Schwartz/R4/USEPA/US@EPA,
Wayne Aronson/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA
bcc
Subject Fw: EPA comments on the preliminary draft permit for the
Barry Power Plant

Eric,

I took a closer look at the permit and Part I.B.4 of the permit states:


"The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time...Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph."

In regards to EPA's request for historical effluent temperature data from Jan. 2006 to present, it appears that APC should have all the measurements they used to calculate the daily average temperature values. Again, please have them forward to us the highest temperature values measured each day from Jan 2006 to present.

Thanks,

Karrie-Jo Robinson-Shell, P.E.

----- Forwarded by Karrie-Jo Shell/R4/USEPA/US on 07/28/2008 01:13 PM -----



Karrie-Jo
Shell/R4/USEPA/US
07/28/2008 12:38 PM

To "Sanderson, Eric" <ELS@adem.state.al.us>
cc "Dean, Glenda" <GLD@adem.state.al.us>, Wayne
Aronson/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA, Paul
Schwartz/R4/USEPA/US@EPA
Subject RE: EPA comments on the preliminary draft permit for the
Barry Power Plant

As discussed earlier today with you, here are my preliminary comments on the revised draft.

1. The permit should require APC report the maximum temperature recorded for each 24-hour period, as well as the duration the effluent discharged this value.

It is my understanding that APC has not been keeping (retaining records) for all the values used to calculate the maximum daily average temperature permit values (which are reported on the DMR as the "daily max") b/c they believe only records only need to be retained for values reported on the DMRs (i.e., just the averages and not all the values used to calculate the averages). Therefore, there is no way to determine, historically, the actual highest temperature they have been discharging. The actual highest temperature discharged, along with the duration of the discharge at this temperature, is important for future thermal modeling for 316a demonstration purposes.

2. The permit should be revised to include the attached study plan elements. Alternatively, the permit

could be revised to state: "The study plan shall be modified, if necessary, within 60 days of receipt of comments from the Department and EPA-Region 4."

EPA-4 is doing a detailed review of as many power plants with 316a renewal requests as possible. To ensure regional consistency, we would like to have an opportunity to review the study plan for Barry, prior to them commencing the study.



Sample CWA Section 316a Plan of Study_predictive_general.doc

Please see the following comments we submitted on other R4 power plant permits with a 316a variances.



CWA Section 316 attachment_071608.doc



TVAUtoPDavis6-23-08.pdf

Karrie-Jo Robinson-Shell, P.E.

Template for CWA Section 316a Plan of Study-Predictive

A. Introductory Information

B. Regulatory Basis

1. Discussion of State Water Quality Standards for Temperature and Dissolved Oxygen
2. Discussion of CWA Section 316a

C. Rationale for Study

D. Description of the Study Setting

1. Discussion of the Receiving Waterbody near the Point of Discharge
 - a. Maximum, Daily Average and Annual Flows
 - b. Nearest Upstream and Downstream USGS Stations
 - c. Existing Ave and Maximum Temperatures and Dissolved Oxygen Concentrations
2. Discussion of NPDES Permit Discharges Within the Primary Study Area
 - i) Biochemical Oxygen Demand loading
 - ii) Effluent Limits and NPDES permit compliance
 - iii) Discussion of how they will be addressed in the model

E. Scope of the 316a Demonstration

1. Information on Representative Important Species (RIS) – **can be obtained by literature search**
 - a. Commercially or Recreationally Valuable
 - i) Specie Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Special temperature requirements for reproduction
 - xi) Thermal shock tolerance for adult (range or gradient)
 - xii) Optimum temperature for performance and growth for non-breeding adult
 - xiii) Thermal shock tolerance for juvenile stage (range or gradient)
 - ivx) Optimum temperature for performance and growth of juvenile
 - xv) Normal spawning location
 - xvi) Normal spawning dates
 - xvii) Normal spawning temperature range
 - xviii) Optimum oxygenation levels

b. Threatened or Endangered

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage
- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Special temperature requirements for reproduction
- xi) Thermal shock tolerance for adult (range or gradient)
- xii) Optimum temperature for performance and growth for non-breeding adult
- xiii) Thermal shock tolerance for juvenile stage (range or gradient)
- ivx) Optimum temperature for performance and growth of juvenile
- xv) Normal spawning location
- xvi) Normal spawning dates
- xvii) Normal spawning temperature range
- xviii) Optimum oxygenation levels

c. Organisms Critical to the Structure and Function of the Ecological System (Habitat Formers)

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage
- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Normal spawning location
- xi) Normal spawning dates

d. Potentially Capable of Becoming Localized Nuisance Species

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage
- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Normal spawning location

e. Representative of the Thermal Requirements of Important Species

Requirements of Important Species But Which Themselves May Not Be Important

- i) Species Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Normal spawning location
 - xi) Optimum oxygenation levels
- f. Local species that are considered to be thermally sensitive
- i) Specie Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Normal spawning location
 - xi) Optimum oxygenation levels
2. Information of organisms included in the study's Balanced, Indigenous Population (BIP) (or Balanced, Indigenous Community (BIC))
- a. Phytoplankton
 - i) Species Names
 - ii) Indicate nuisance species
 - b. Zooplankton and Merplankton
 - i) Specie Names
 - ii) Indicate nuisance species
 - c. Habitat Formers
 - i) Specie Names
 - ii) Indicate nuisance species
 - d. Shellfish/Macroinvertebrates
 - i) Specie Names
 - ii) Indicate nuisance species, endangered species, commercially valuable species, critical aquatic organisms, and those species that are dependant on habitat formers for protection
 - e. Fish
 - i) Specie Names

- ii) Indicate nuisance species, endangered species, commercially valuable species, critical aquatic organisms, and those species that are dependant on habitat formers for protection

F. Description of the Primary Study Area (PSA) and Reference Areas

1. Definitions per EPA draft 1977 316a guidance document
2. Inclusion of map depicting the PSA in relation to the reference areas and spawning, nursery, migration and/or feeding areas for all RIS

G. Discussion of the 3-dimensional Thermal Model and Dissolved Oxygen Models to be Used

1. Use of real-time effluent data for no less than 365 consecutive days
 - i) highest daily temperatures within a 24-hour period
 - ii) average daily temperatures
 - iii) BOD loadings
2. Use of real-time data on temperature, DO, etc in reference areas

H. Study Results and Conclusions

1. Discussion of anticipated/possible thermal plume impacts on species in BIP
 - i) larval stage
 - ii) juvenile stage
 - iii) adult stage
2. Discussion on anticipated/possible shifts towards nuisance species
3. Decision Criteria for Determining Appreciable Harm
4. Decision Criteria for Determining if a Balanced, Indigenous Community will exist in the Primary Study Area compared to the Reference Area

Enclosure A
EPA Region 4
Water Management Division
Comments on Section 316(a) Variance Demonstration

A. BACKGROUND

In 1974, EPA issued regulations for thermal discharges from point sources in the steam electric power generation category. However, the regulations were remanded by the U.S. Court of Appeals for the Fourth Circuit for the Agency to determine what was Best Available Technology (BAT) for existing sources on a case-by-case basis under Section 402(a)(1). Since EPA has never re-promulgated a thermal discharge effluent guideline, States are required to establish BAT on a case-by-case basis using best professional judgment (BPJ).¹

1. Heat as a Pollutant

“Heat” is considered a non-conventional and non-toxic pollutant² under the Clean Water Act (CWA) (40 Code of Federal Regulations (C.F.R.) Section 401.15); as such, point source discharges of heated wastewater are regulated under the National Pollutant Discharge Elimination System (NPDES) program. CWA sections 301(b)(1)(C) and 301(b)(2)(A) require the development of appropriate effluent standards for heat. Specifically, provisions at CWA section 301(b)(2)(A) require the application of BAT, and CWA section 301(b)(1)(C) requires the application of “any more stringent limitation, including those necessary to meet water quality standards (WQSs)...”

2. CWA Section 316(a)

Section 316(a) of the CWA pertains specifically to point sources with thermal discharges. It authorizes the EPA or a State (if it has been granted authorization of the NPDES program) to impose alternative effluent limitations for the control of the thermal component of a discharge than would otherwise be required under sections 301 or 306 of the CWA, if the owner or operator can demonstrate to the satisfaction of the Administrator³ “that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the body of water into which the discharge is to be made.”

Regulations implementing Section 316(a) are codified at 40 C.F.R. Part 125, subpart H. These regulations describe the criteria and standards to be used to determine whether or

¹ Environmental Administrative Decision in re Dominion Energy Brayton Point LLC, NPDES 03-12, Remand Order decided February 1, 2006, page 539.

² Section 301(b)(2)(F) of the CWA.

³ This authority has been delegated to the Regional Administrator in EPA Order of Delegation 1270.4

not alternative limitations (i.e. a thermal variance from the applicable WQS) should be authorized. In short, before a thermal variance can be allowed, 40 C.F.R. §§ 125.72 and 125.73 require the permittee to demonstrate that the otherwise applicable thermal discharge effluent limit is more stringent than necessary to assure the protection and propagation of the balanced, indigenous population (BIP) and also requires the permittee to “show” that, after consideration of “cumulative impacts of its thermal discharge together with all other significant impacts on the species affected”, the variance will assure the protection and propagation of a BIP. (See 40 C.F.R. § 125.73(a).) In doing so, a permittee for an existing source may base its demonstration on the “absence of prior appreciable harm in lieu of predictive studies.” See 40 C.F.R. §125.73(c)(1). The regulations at 40 C.F.R. §§125.73(c)(1)(i)-(ii) further state that “in determining whether or not prior appreciable harm has occurred,” EPA (or delegated State) “shall consider the length of time in which the applicant has been discharging and the nature of the discharge.”

B. COMMENTS

General

1. By not clearly defining key components in its demonstration document, the permittee did not adequately demonstrate that the proposed alternative limit will assure protection and propagation of a balance, indigenous population (BIP), nor did the permittee fully comply with 40 C.F.R. § 125.72 (e) which states: “In making the demonstration the discharger shall consider any information or guidance published by EPA to assist in making such demonstrations.”

The permittee did not use the definitions in EPA’s 1977 draft 316a guidance document (www.epa.gov/npdes/pubs/own0001.pdf) to clearly determine/define: 1) adverse environmental impact, 2) balanced, indigenous community (or population), 3) area of potential damage, 4) the discharge vicinity, 5) dominant species, 6) far-field area, 7) habitat formers, 8) nuisance species, 9) primary study area, 10) representative, important species (RIS), and 11) threatened or endangered species. Some of these terms are discussed in detail, below.

Specific

2. The permittee did not define the BIP to be used in the 316a demonstration study. Identification of the BIP is necessary to show compliance with the Section 316a requirement that the thermal component of the discharge assures the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on that body of water into which the discharge is to be made.

Definition and meaning of a BIP

Section 316(a) of the CWA contains the term "BIP" but does not define it. However, the 1974 proposed federal regulations for thermal discharges (Federal Register volume 39, number 61 dated March 28, 1974, page 11436) defined BIP as:

"a population typically characterized by diversity at all tropic levels, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and non-domination of pollution-tolerant species. Such a population may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a population will not include species whose presence or abundance is attributable to the introduction of pollutants."

The preamble on page 11435 of these regulations clarifies the definition by stating:

"The description in the regulations recognizes that an indigenous population may contain species not historically native to the area which have resulted from major irreversible modifications to the water body (such as hydroelectric dams) or to the contiguous land area (such as deforestation attributable to urban or agricultural development) or from deliberate introduction in connection with a program of wildlife management. To qualify for an exemption under section 316(a) it is therefore not necessary to show that the discharge is compatible with a population which may have existed in a pristine environment but which has not perished. On the other hand, a balanced population would not, under the description contained in the regulations, include a population dominated by pollution-tolerant species whose dominance is attributable to polluted water conditions. The opposite position (i.e., determining the indigenous population in all cases by reference to that presently existing) would unfairly reward discharges located on heavily polluted waters for their past neglect. In areas of poor water quality, modification of thermal limitations would be appropriate only if they would assure protection of those species which could be expected to exist if the receiving water met water quality criteria designed to protect fish, shellfish and wildlife."

40 C.F.R. § 125.71(c) defines the term "balanced, indigenous community" as:

"A biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act; and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a)."

Page 74 of EPA's 1977 316(a) Guidance Document provides clarification regarding the linkage between the definition of "balanced, indigenous community" and the meaning of a BIP by stating that the definition of a "balanced, indigenous community" is consistent with the term BIP. The document further states that:

"For purposes of a 316(a) demonstration, distribution and composition of the indigenous population should be defined in terms of the population which would be impacted by the thermal discharge caused by the alternative effluent limitation proposed under 316(a). A determination of the indigenous population should take into account all impacts on the population except the thermal discharge. Then, the discrete impact of the thermal discharge on the indigenous population may be estimated in the course of a 316(a) demonstration. In order to determine the indigenous population which will be subject to a thermal discharge under an alternative 316(a) effluent limitation, it is necessary to account for all non-thermal impacts on the population such as industrial pollution, commercial fishing, and the entrapment and entrainment effects of any withdrawal of cooling water through intake structures under the alternative 316(a) effluent limitation. The above considerations will then make it possible to estimate the true impact of the thermal discharge on the population."

Brayton Point Power Plant – An Example of How a BIP was Defined

The February 1, 2006, Environmental Administrative Decision (EAD) regarding the Brayton Point power plant (Brayton Point EAD) in Massachusetts⁴ summarized that the above definition of a balanced, indigenous community clearly envisioned a consideration of more than the population of organisms currently inhabiting the water body. Therefore, although the regulation allows a 316(a) variance demonstration to include historically non-native species that are currently present, "it explicitly excludes certain currently present species whose presence or abundance is attributable to avoidable pollution or previously-granted section 316(a) variances." Page 557 of the Brayton Point EAD goes on to further state that a BIP "can be the indigenous population that existed prior to the impacts of pollutants, not solely the current populations of organisms."

To the question of how a permittee should determine, or measure, impacts for an existing thermal discharge, the Brayton Point EAD points out that it is appropriate to use a nearby water body unaffected by the existing thermal discharge as a reference area or point.⁵

3. The permittee did not identify and submit data and/or information on the thermal tolerance ranges and known spawning areas in the study area(s) for each life stage (e.g., larval, juvenile and adult) of each species selected as a Representative Important Species (RIS) or for each species selected to be in the BIP.

40 C.F.R. § 125.71 (b) defines Representative Important Species as "species which are representative, in terms of their biological needs, of a balanced, indigenous community of shellfish, fish and wildlife in the body of water into which a discharge of heat is made."

⁴ Brayton Point EAD, page 556

⁵ Brayton Point EAD, page 559.

40 C.F.R. § 125.72(b) requires permittees to include information on RIS in the 316a demonstration. Specifically, this regulation states: “In selecting representative important species, special consideration shall be given to species mentioned in applicable water quality standards.”

Identification of thermal tolerance ranges is necessary in order to determine the temperature above which an organism experiences a certain level of adverse effects and thereby determining proper 316a variance conditions to reasonably protect the most sensitive life stage of the most sensitive species.

An example of how thermal tolerance ranges were effectively used is in the NPDES permit for the Brayton Point power plant. EPA-Region 1 selected temperature thresholds to estimate the volume of the receiving water body that would not exceed critical threshold temperatures. They also estimated the duration of the exceedance for different thermal discharge scenarios. In turn, they estimated a minimum percentage of the receiving water body that could be impacted due to the facility’s thermal discharge but to an extent that would still allow for the survival of a sufficient number of juvenile species for recovery and maintenance of the BIP.⁶

4. The Permittee did not determine, before commencing the study, the decision criteria that will be used to determine if “appreciable harm” has occurred.

Existing Sources and a Demonstration of “Absence of Prior Appreciable Harm”

40 C.F.R. § 125.73 (c)(1) addresses how existing sources may make a demonstration for a 316(a) variance based on the “absence of prior appreciable harm. Specifically, subpart (c)(1) goes on to state such a demonstration shall show:

“(i) That no appreciable harm has resulted from the normal component of the discharge taking into account the interaction of such thermal component with other pollutants and the additive effect of other thermal sources to a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge has been made; or

(ii) That despite the occurrence of such previous harm, the desired alternative effluent limitations (or appropriate modifications thereof) will nevertheless assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made.”

The term “appreciable harm” is not defined in the regulations; however, one possible definition is damage that results in phenomena such as:

1. Substantial increase in abundance or distribution of any nuisance species or heat-tolerant community not representative of the highest community development achievable in receiving waters of comparable quality.

⁶ Brayton Point EAD, page 573-576.

2. Substantial decrease of formerly indigenous species, other than nuisance species.
3. Changes in community structure to resemble a simpler successional stage than is natural for the locality and season in question.
4. Unaesthetic appearance, odor, or taste of the waters.
5. Elimination of an established or potential economic or recreational use of the waters.
6. Reduction of the successful completion of life cycles of indigenous species, including those of migratory species.
7. Substantial reduction of community heterogeneity or tropic structure.⁷

5. The permittee did not submit detailed information describing the methodology used to develop the bioassessment index, which was used in the decision process.

When bioassessment indices are used to determine the absence or presence of appreciable harm, then the permittee must provide a detailed explanation of the methodology used to develop the index.

6. The permittee did not determine, prior to commencing the 316a demonstration study, the primary and far-field study areas as defined in EPA's 1997 draft 316a guidance document. Identification of the primary and far-field study areas is necessary to show compliance with the Section 316a requirement that the thermal component of the discharge assures the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on that body of water into which the discharge is to be made.

EPA's 1977 316a guidance document defines primary area as "the primary study area is the entire geographic area bounded annually by the locus of the locus 2°C above ambient surface isotherms as these isotherms are distributed throughout an annual period. The reference ambient temperature shall be recorded at a location agreed by the Regional Administrator/Director." A far-field study area is defined in the guidance as "any perturbation of the aquatic ecosystem outside of the primary study area that is attributable to, or could be expected from, the thermal discharge (taking into account the intersection of the thermal component with other pollutants.)"

⁷ NPDES Permit Renewal Application Package for Plant Branch, NPDES No. GA0026051, volume 1 of 3, Georgia Power, June 1997, page E-2

7. The permittee did not use the definition of “adverse environmental impact” in EPA’s 1977 draft 316a guidance to determine the extent of impacts that occurred in the PSA due to the thermal component of the discharge. Defining the term “adverse environmental impact” is necessary to show compliance with the Section 316a requirement that the thermal component of the discharge assures the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on that body of water into which the discharge is to be made.

The term “adverse environmental impacts” is defined in the guidance as: “impacts that occur whenever there will be damage as a result of thermal discharges. The critical question is the magnitude of any adverse impact. The magnitude of an adverse impact should be estimated both in terms of short term and long term impact with reference to the following factors:

- (1) Absolute damage (# of fish or percentage of larvae thermally impacted on a monthly or yearly bases);
- (2) Percentage damage (% of fish or larvae in existing populations which will be thermally impacted, respectively);
- (3) Absolute and percentage damage to any endangered species;
- (4) Absolute and percentage damage to any critical aquatic organism;
- (5) Absolute and percentage damage to commercially valuable and/or sport fisheries yield; or
- (6) Whether the impact would endanger (jeopardize) the protection and propagation of a balanced population of shellfish and fish in and on the body of water to which the cooling water is discharged (long term impact).”

C. RECOMMENDATIONS

1. An Approach for Determining an Appropriate BIP for CWA 316(a) Determinations

The 1977 316(a) draft guidance document does not provide details on how to select an appropriate BIP for purposes of an evaluation. However, based on information from the Brayton Point EAD, an appropriate selection of a BIP can be based on the following:

1. Field sampling in an area where “the indigenous population that existed prior to the impacts of pollutants, not solely the current population of organisms,” can be found.⁸ This may include those populations present in an appropriate area outside the thermal influence of the discharge or,
2. In absence of an appropriate reference area, other pertinent scientific sources may be used.⁹

2. An Approach for Determining the Adverse Environmental Impacts on a BIP

Use of Biota to Assess Water Quality Conditions

⁸ Brayton Point EAD, page 557

⁹ Brayton Point EAD, page 554

Because of the dependence of aquatic organisms on the chemical and physical conditions in the environment, the condition of biota have long been used as a means of determining the conditions of the water and sediments in which they live. An enormous array of field and laboratory techniques has been developed to examine individuals, populations and entire communities for information about the environment depending on the specific questions being asked. Strategies for impact assessment range from examinations of behavior, physiology, chemistry and genetics of individual organisms to community structure assessments. In addition, advances in computer technology, data processing and statistical software allow sophisticated data analysis of very large data sets to be conducted with relative ease.

The EPA document: "Design of 301(h) Monitoring Programs for Municipal Wastewater Discharges to Marine Waters" (1982) states: *Section 125.62(b) of the amended 301(h) regulations requires that the biological monitoring programs for both small and large 301(h) discharges must provide data adequate to evaluate the impact of the modified discharge on the marine biota. This generally necessitates comparing the characteristics of selected marine communities in the vicinity of the discharge with the characteristics of similar communities in reference areas. Therefore, the same type of comparative strategy required for demonstrating a balanced, indigenous population (BIP) of shellfish, fish, and wildlife in the application should be incorporated into the biological monitoring program.*

The EPA document: "CWA Section 403: Procedural and Monitoring Guidance" (1994) also specifies the use of community analysis as the principle means of biological impact assessment.

EPA technical guidance for CWA Section 301(h) and 403(c) regulatory programs generally group analytical approaches into three categories: 1) biological indices, 2) indicator species and 3) multivariate analyses.

The CWA Section 301(h) and 403(c) programs have extensive published monitoring guidance, much of it relevant to and useful for 316 (a) demonstration projects. The 403 guidance: *CWA Section 403: Procedural and Monitoring Guidance* (1994; EPA 842-B-94-003) contains sections on monitoring for changes in benthic community structure (Chapter 4.4), fish populations (Chapter 4.7), plankton biomass, productivity and community structure/function (Chapter 4.8), and habitat identification methods (Chapter 4.9). Each section contains rationale, monitoring design considerations, analytical methods considerations, QA/QC considerations, statistical design considerations and use of data.

The following section will focus on multivariate techniques for impact analysis. Unlike indices and indicator species, when used correctly, multivariate techniques have the following characteristics:

- Possess biological meaning

- Robust empirical indicators of ecosystem health
- Incorporate information on form and function of resident species

The impact assessment approach we recommend is a multivariate approach taken directly from the documents:

Clarke KR, Warwick RM (1994 & 2001) *Change in Marine Communities: An Approach to Statistical Analysis and Interpretation*. 1st edition: Plymouth Marine Laboratory, Plymouth, UK, 144pp. 2nd edition: PRIMER-E, Plymouth, UK, 172pp

Clarke KR, Gorley RN (2001 & 2006) PRIMER v5 (& v6): User manual/tutorial, PRIMER-E, Plymouth UK, 91pp (& 192pp)

These documents accompany the computer software package PRIMER (*Plymouth Routines In Multivariate Ecological Research*) developed at Plymouth Marine Laboratory, UK. The above referenced multivariate analysis approach for communities is well founded in that it has been used in over 3000 peer reviewed scientific papers published in over 380 journals as of 2007, documenting its use in a wide variety of marine and freshwater applications as well as with terrestrial plant and animal communities.

It should be noted that much has been written regarding multivariate community data analysis and the vast array of statistical methodologies available. Most, if not all, of the many methods used in ecological studies are available in a number of statistical software programs. The approach discussed here is not an endorsement of any product, but is intended as an example of a sound and straightforward approach to community analysis.

This approach uses a strategy of interpretation of community structure data (abundance or biomass) for a set of species comprising the communities taken for one or more replicate samples at a number of sites representing both putatively impacted and reference conditions. The multivariate approach bases comparisons among and between samples on the extent to which samples share species at comparable abundances. The community data collected for 316(a) demonstrations would typically result in large species-by-sample arrays where community structure patterns are not easy to see. Multivariate statistical analyses described here aim to reduce the complexity of large data arrays and produce a graphical representation of the biological relationships between samples (sites). The patterns can be tested for the significance of the changes in community structure and further analyzed to identify specific changes in the communities and to relate changes to environmental variables.

Basic Overview of Methods

The approach detailed in Clarke KR, Warwick RM (1994 & 2001) is divided into four broad categories or stages which may be appropriate for 316(a) monitoring.

- 1) Use of classification analysis (clustering) and ordination (non-metric multi-dimensional scaling) to produce a graphical representation of communities at sites based on biota of samples. The purpose at this stage is to reduce the complexity of the species-by-site data so that meaningful patterns among samples will emerge. Used in the 316(a) demonstration context, these analytical techniques can be used specifically to look for patterns of similarity (or dissimilarity) in community structure among samples collected from thermally affected areas and reference areas. This is considered a descriptive rather than an explanatory stage of analysis.
- 2) Determination of the “significance” of any patterns of community structure that emerge from clustering and ordination. This stage is comparable to hypothesis testing done with parametric statistics except that in these cases, the tests employed are non-parametric in that they make none of the assumptions (i.e., normality) regarding the distribution of the data that would be required for the more classical hypothesis testing approach. This is an explanatory stage where real community differences may be attributed to the effects of the thermal effluent. Note that at this stage only differences among samples are determined and not directionality (better/worse).

Important at this stage is the identification of the species in each community type that are mainly responsible for any significant differences between affected and reference sites. Routines are available that can breakdown the percent contribution of species to the total dissimilarity between sites. Species identified as being important contributors to site differences can be further analyzed for thermal or pollution tolerance.

- 3) Determining levels of disturbance using other measures from the community data indicative of disturbed conditions. Thermal discharges may cause real community changes, not all of which may be considered deleterious. For example over some range of increased temperatures certain species may become more abundant. At this stage of analysis, measures constructed will aid in the determination of impacts that may be described as adverse. The directionality of community change is critical in determining whether a BIP is being maintained in spite of the presence of altered thermal discharges.
- 4) Linking community structure change to environmental variables. Though 316(a) is focused on the effects of thermal effluent, other variables may be responsible for some of the community differences between sites. The receiving water body may be impacted by other (non-thermal) forms of pollution. Collecting samples from heated and unheated portions of a water body do not comprise a “controlled” experiment. If other chemical and physical data are available from sites used in the community assessment, that data can be matched to community patterns to assist in the determination of causality.

D. ADDITIONAL COMMENTS

1. Cost and Economic Issues

Costs are to be considered in developing technology-based standards for thermal discharges based on the best professional judgment of the permit writer in accordance with CWA Sections 301(b)(2) and 304(b)(2). However, the language in CWA Section 316(a) does not mention the consideration of costs or economic issues for determining whether or not to grant a thermal variance. This is evidenced in the 1972 Legislative History, page 175, where it indicates that Congress did not intend for costs to be considered in applying CWA Section 316(a). Also refer to In the Matter of Public Service Company of Indiana, Inc., Wabash River Generating Station, 1979 EPA App. LEXUS 4,[*41] –[*43], 1 E.A.D. 590 (November 29, 1979)¹⁰

2. Predictive Studies

In lieu of field studies, EPA's draft guidance document regarding 316a variances allows permittees to submit a 316a demonstration based on modeling and literature research. Below is a study plan outline that permittees should use:

Template for CWA Section 316a Plan of Study-Predictive

A. Introductory Information

B. Regulatory Basis

1. Discussion of State Water Quality Standards for Temperature and Dissolved Oxygen
2. Discussion of CWA Section 316a

C. Rationale for Study

D. Description of the Study Setting

1. Discussion of the Receiving Waterbody near the Point of Discharge
 - a. Maximum, Daily Average and Annual Flows
 - b. Nearest Upstream and Downstream USGS Stations
 - c. Existing Ave and Maximum Temperatures and Dissolved Oxygen Concentrations
2. Discussion of NPDES Permit Discharges Within the Primary Study Area
 - i) Biochemical Oxygen Demand loading
 - ii) Effluent Limits and NPDES permit compliance
 - iii) Discussion of how they will be addressed in the model

E. Scope of the 316a Demonstration

1. Information on Representative Important Species (RIS) – **can be obtained by literature search**

¹⁰ US EPA Region 1, *Clean Water Act NPDES Permitting Determinations for Thermal Discharge and Cooling Water Intake from Mirant Kendall Station in Cambridge, MA*, NPDES Permit No. MA0004898, June 8, 2004, page 32-33. (www.epa.gov)

a. Commercially or Recreationally Valuable

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage
- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Special temperature requirements for reproduction
- xi) Thermal shock tolerance for adult (range or gradient)
- xii) Optimum temperature for performance and growth for non-breeding adult
- xiii) Thermal shock tolerance for juvenile stage (range or gradient)
- ivx) Optimum temperature for performance and growth of juvenile
- xv) Normal spawning location
- xvi) Normal spawning dates
- xvii) Normal spawning temperature range
- xviii) Optimum oxygenation levels

b. Threatened or Endangered

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage
- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Special temperature requirements for reproduction
- xi) Thermal shock tolerance for adult (range or gradient)
- xii) Optimum temperature for performance and growth for non-breeding adult
- xiii) Thermal shock tolerance for juvenile stage (range or gradient)
- ivx) Optimum temperature for performance and growth of juvenile
- xv) Normal spawning location
- xvi) Normal spawning dates
- xvii) Normal spawning temperature range
- xviii) Optimum oxygenation levels

c. Organisms Critical to the Structure and Function of the Ecological System (Habitat Formers)

- i) Specie Names
- ii) Protective temperature for the most sensitive egg stage
- iii) Time period for the most sensitive egg stage
- iv) Protective temperature for the most sensitive larval stage

- v) Time period for the most sensitive larval state
- vi) Protective temperature for the most sensitive juvenile stage
- vii) Time period for the most sensitive juvenile stage
- viii) Protective temperature for the most sensitive adult stage
- ix) Time period for the most sensitive adult stage
- x) Normal spawning location
- xi) Normal spawning dates
- d. Potentially Capable of Becoming Localized Nuisance Species
 - i) Specie Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Normal spawning location
- e. Representative of the Thermal Requirements of Important Species
Requirements of Important Species But Which Themselves May Not Be Important
 - i) Species Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Normal spawning location
 - xi) Optimum oxygenation levels
- f. Local species that are considered to be thermally sensitive
 - i) Specie Names
 - ii) Protective temperature for the most sensitive egg stage
 - iii) Time period for the most sensitive egg stage
 - iv) Protective temperature for the most sensitive larval stage
 - v) Time period for the most sensitive larval state
 - vi) Protective temperature for the most sensitive juvenile stage
 - vii) Time period for the most sensitive juvenile stage
 - viii) Protective temperature for the most sensitive adult stage
 - ix) Time period for the most sensitive adult stage
 - x) Normal spawning location
 - xi) Optimum oxygenation levels

2. Information of organisms included in the study's Balanced, Indigenous Population (BIP) (or Balanced, Indigenous Community (BIC))

a. Phytoplankton

- i) Species Names
- ii) Indicate nuisance species

b. Zooplankton and Merplankton

- i) Specie Names
- ii) Indicate nuisance species

c. Habitat Formers

- i) Specie Names
- ii) Indicate nuisance species

d. Shellfish/Macroinvertebrates

- i) Specie Names
- ii) Indicate nuisance species, endangered species, commercially valuable species, critical aquatic organisms, and those species that are dependant on habitat formers for protection

e. Fish

- i) Specie Names
- ii) Indicate nuisance species, endangered species, commercially valuable species, critical aquatic organisms, and those species that are dependant on habitat formers for protection

F. Description of the Primary Study Area (PSA) and Reference Areas

- 1. Definitions per EPA draft 1977 316a guidance document
- 2. Inclusion of map depicting the PSA in relation to the reference areas and spawning, nursery, migration and/or feeding areas for all RIS

G. Discussion of the 3-dimensional Thermal Model and Dissolved Oxygen Models to be Used

- 1. Use of real-time effluent data for no less than 365 consecutive days
 - i) highest daily temperatures within a 24-hour period
 - ii) average daily temperatures
 - iii) BOD loadings
- 2. Use of real-time data on temperature, DO, etc in reference areas

H. Study Results and Conclusions

- 1. Discussion of anticipated/possible thermal plume impacts on species in BIP
 - i) larval stage
 - ii) juvenile stage
 - iii) adult stage
- 2. Discussion on anticipated/possible shifts towards nuisance species
- 3. Decision Criteria for Determining Appreciable Harm
- 4. Decision Criteria for Determining if a Balanced, Indigenous Community will exist in the Primary Study Area compared to the Reference Area



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JUN 23 2008

Mr. Paul E. Davis, Director
Division of Water Pollution Control
Tennessee Department of Environment and Conservation
6th Floor, L & C Annex
401 Church Street
Nashville, Tennessee 37243-1534

SUBJECT: Tennessee Valley Authority (TVA) – Johnsonville Fossil Plant
NPDES Permit Number TN0005444

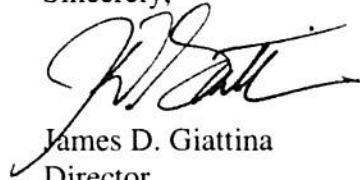
This letter is in response to your request for the Environmental Protection Agency (EPA) to review and comment on the draft National Pollutant Discharge Elimination System (NPDES) permit for an existing discharge from TVA Johnsonville power plant. EPA received the draft permit on May 30, 2008. In accordance with the EPA/Tennessee Memorandum of Agreement (MOA), we have concluded our preliminary review of the draft permit and have found that the current information is inadequate to determine whether the draft permit meets the requirements of the Clean Water Act (CWA). Accordingly, pursuant to 40 C.F.R. Section 123.44(d)(2) and the MOA, this letter will serve as EPA's interim objection to the issuance of this permit.

EPA has determined, pursuant to 40 C.F.R. Section 125.72(c), that additional information is needed regarding the permittee's request for renewal of its CWA Section 316(a) variance for thermal discharges. According to information in the NPDES permit application materials, the initial 316(a) variance was initially approved in 1976 based on detailed biological studies performed by the permittee during 1973-1975. Based on the limited operating and process information submitted by the permittee at the time of subsequent renewals, the variance has been subsequently renewed each permit term based on information that indicated no significant changes had been made to the biotic community of the receiving water body that would impact the initial 316(a) variance determination.

Due to recent drought conditions that have resulted in record low annual mean flows in some water bodies, EPA is requesting that the permittee update previous 316(a) biological studies in order for us to determine if the thermal component of the discharge continues to assure the "protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on the receiving water body." We recommend the facility complete a biological study and submit the results on the enclosed 316(a) information sheet (See Enclosure A, which was electronically sent to Pam Myers of your staff), or complete a predictive study that includes elements in Enclosure B.

We request that you address the concern above and forward the information to EPA. In accordance with the MOA and federal regulations, the full period of time for review of this draft permit will recommence when the requested information is received by this office. If you have any questions, please contact Ms. Karrie-Jo Shell of my staff at 404/562-9308.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Giattina', with a stylized flourish extending from the end.

James D. Giattina
Director
Water Management Division

Enclosures - 316(a) Biological Study Information Sheet
316(a) Predictive Study Elements

cc: Mr. Gordon G. Park, Manager of Environmental Compliance, TVA

DRAFT

PLANT BARRY 316A BIO-THERMAL MODELING STUDY

Alabama Power Company (APC) and the Alabama Department of Environmental Management (ADEM) have agreed in principle to continue biological studies along the Mobile River in order to provide data that will be used to access whether or not the continuance of the current 316(a) variance is justified in the 2013 permit renewal. APC has determined that an assessment of the thermal tolerances for the aquatic community would be best performed by focusing on the sessile macroinvertebrate community as a surrogate for determining that a balanced indigenous aquatic community continues to exist outside the allowed mixing zone within the Mobile River. This study is more complex than any other previous 316A study. Large scale pilot studies to test the proposed experimental design were initiated in May of 2008 and are proceeding successfully. Results from the warm season 2008 pilot study will be used to develop a detailed study design acceptable to ADEM.

BACKGROUND

The Mobile River in the vicinity of the Plant Barry is subject to many abiotic factors that must be accounted for when determining the thermal tolerances of the aquatic community. Within this section of the Mobile River, the macroinvertebrate community is the best indicator for determining the thermal tolerance of the localized aquatic community. An experimental design using protected artificial plate samplers along with continuous recording thermistors will be used to control for the impacts of abiotic factors (such as continuous barge traffic, changing substrate types, varying slopes and depths, tidal fluctuations, etc). APC is currently analyzing these changing factors. Monitoring throughout the thermally sensitive warm season will account for any temporal variability associated with the macroinvertebrate community taxa and numbers. Data resulting from the macroinvertebrate samplers, operational flows, river monitoring for hydrologic and thermal information will allow for the development of an empirically based model which will predict the effects of changing water temperatures on various macroinvertebrate indices. Meaningful changes in these macroinvertebrate indices will be used to determine the combination of plant discharge and river temperature/flow regimes that may cause changes to the "balanced indigenous population".

METHODS

APC will conduct both biothermal monitoring of macroinvertebrate plate samplers and hydrologic/thermal monitoring of the plant discharge and river to develop a complete biothermal model for the Plant Barry thermal discharge. APC will also conduct statistical analyses to assist in determining both the empirical predictions for the various macroinvertebrate indices and receiving water temperatures. The following brief methodology outlines what APC has already begun and is prepared to execute in order to fulfill the goals of this required 316A study.

Biothermal Monitoring

Study area: approximately 12 river miles, from 3 miles above plant intake canal to 6 miles below the thermal discharge

Duration: warm season only (June 1 through October 15)

Pilot study: 1 year, 2008

Formal study: 2 years of study between 2009 and 2013

Protective housing equipment: aluminum housing for 10 artificial plate samplers

Sampling stations: approximately 18

Standard monitoring depth: 5ft below lowest river level

Deployment and retrieval: divers with surface supply air

Sampler exposure: 6 weeks

Identification level: genera taxa (if possible)

QA/QC: 10% of samples to be re-analyzed by outside contractor

Temperature monitoring: duplicate Onset HOBO thermistors for each housing placement

Hydrologic/Thermal Monitoring

Study area: same as biothermal monitoring

Duration: same as biothermal monitoring

Profiling: temperature, dissolved oxygen and conductivity

Frequency: 1/wk, mid-channel, top to bottom depths

River transect monitoring:

Temperature: (1ft and same as macroinvertebrate samplers depths)

Water velocity and flow: using acoustic doppler current profiler (ADCP)

Frequency: 1/macroinvertebrate sampler deployment (6 wk)

Number of transects: approximately 20 cross river transects

Diurnal: one high and one low tide set of transects

Continuous temperature and river stage monitoring:

Equipment: Onset HOBO thermistors and pressure transducers

Placements: most upstream and downstream boundary of 12 mile river study reaches along with thermal discharge canal

Statistical Analyses

Biothermal analyses: logistic regression analyses using SPSS

Hydrologic/thermal analyses: various empirical modeling approaches using SPSS

The biothermal analyses will determine at which water temperatures the macroinvertebrate indices are affected when compared to upstream control stations. The empirical modeling using river flow and temperature along with plant cooling water flow and temperatures will be used to predict conditions whereby these temperatures occur within the 12 mile Mobile River reach.

Questions can be directed to Bill Garrett, APC EA Lab & Field Services, 8-255-6168 or 205-664-6168

Response to EPA R4 Questions Dated August 18, 2008

- 1) Where does the segment of water that the facility discharges into start and end? (This should be the section as defined for CWA section 303 purposes).

Response: The thermal discharge occurs in the segment of the Mobile River classified as F&W. In accordance with ADEM Admin. Code r 335-6-11-.02 this segment is listed as that portion of the Mobile River upstream of the Spanish River and downstream of the Plant Barry intake.

- 2) What is ADEM's policy regarding thermal mixing zones?

Response: ADEM regulations set forth at ADEM Admin. Code r 335-6-10-.05(3) establish that Mixing zones, i.e., that portion of the receiving waters where mixture of effluents and natural waters take place, shall not preclude passage of free-swimming and drifting aquatic organisms to the extent that their populations are significantly affected.

Is there a set way you determine the size?

Because the Barry Plant has a 316(a) thermal variance there is not a regulatory mixing zone. If the water quality standard for temperature was applicable, the size of the allowable mixing zone is defined by ADEM Admin. Code r 335-6-6-.15(10)(d).

(d) Mixing zone prohibitions.

1. Mixing zones in streams shall not preclude passage of aquatic life up or down stream, shall not exceed a width of 50 percent of the stream width, shall not exceed a length of five times the width of the mixing zone, and shall not exceed an area of 25 percent of the stream cross-sectional area, and a mixing zone shall not encompass drinking water intakes.

2. The total area of all mixing zones in a lake shall not encompass more than ten percent of the surface area of

the lake, the radius of any one zone shall not be greater than 750 feet, and a mixing zone shall not encompass water intakes.

- 3) What is the percentage of area the Barry Steam MZ takes up in relationship to the area of the water segment into which the discharge is made?

Response: The thermal plume is roughly estimated to occupy between 25 to 30% of the volume in the water segment from the point of discharge (just downstream of the Barry Plant intake) and the southbound lane of the I-65 bridge. The percent of the volume in the entire segment downstream of the Plant Barry intake to upstream of the Spanish River would obviously be less.

- 4) We still need to know how ADEM (or APC) defines "appreciable harm".

Response: "Appreciable harm" is used in federal not state regulations; therefore, the definition should be provided by EPA to the states.

The applicable ADEM regulation regarding a thermal variance is set forth as follows:

335-6-10-.09(5)(vii): Thermal permit limitations in NPDES permits....will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife, in and on the body of water to which the discharge is made. Any such demonstration shall take into account the interaction of the thermal component with other pollutants discharged.

ADEM regulations set forth at ADEM Admin. Code r 335-6-10-.05(3) establish that Mixing zones, i.e., that portion of the receiving waters where mixture of effluents and natural waters take place, shall not preclude passage of free-swimming and drifting aquatic organisms to the extent that their populations are significantly affected.

- 5) We still need a map depicting the spawning and nursery area for RIS.

Response: There is no such map available to ADEM.

- 6) APC's draft 316a study outline mentions the use of macroinvertebrates as a surrogate to determine the impact of the discharge on the BIP. Explain how the use of macroinvertebrates will be used to protect the balanced, indigenous population of "shellfish, fish and wildlife in and on the body of water into which the discharge is made". (where body of water is defined as the segment of water determined using the State Continuing Planning Process under section 303(e) of the Act; ref. page 69 of EPA's draft 1977 CWA section 316(a) guidance doc.)

Response: The purpose of the additional studies proposed in the permit are to provide support for extension of the 316(a) variance if the Permittee requests another extension of the 316(a) variance during the next permit cycle. Additional studies have been conducted on fish, However, additional studies of macroinvertebrates are needed. In the 2001 APCo 316a study, there was an obvious reduction in macroinvertebrate densities downstream of plant, though not judged to be statistically significant. The results of prior studies do not clearly implicate, nor do they absolve, the thermal discharge of Barry Steam Plant as a contributor to these effects. Additional study is recommended to determine if the effects to biological communities observed in 2001 and 2002 studies are caused by thermal effluent and/or I&E.



Karrie-Jo
Shell/R4/USEPA/US
08/13/2008 09:08 AM

To els@adem.state.al.us
cc Roland Ferry/R4/USEPA/US@EPA, Wayne
Aronson/R4/USEPA/US@EPA, Paul
Schwartz/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA

bcc

Subject "appreciable harm"

This is a follow-up from our conversation today on the draft APC 316a study outline for the Barry Steam plant.

As we discussed, EPA did not define the term "appreciable harm", which is mentioned in the 316a regs. I suggested APC define in their draft outline, how they ultimately determine if "appreciable harm" exists based on the findings of the study. They should be able to do this if the study is designed properly. In other words, if they are able to "tease out" other factors, other than thermal, that would contribute to an unbalanced indigenous population in the vicinity of the discharge (compared to a reference point) like barge traffic, other NPDES discharge, salt wedges, etc., then they should be able to nail down, up front, what would constitute "appreciable harm."

Below is the definition for "appreciable harm" GA Power used in the 316a document for their Plant Branch facility. In retrospect, terms "substantial", "changes", "elimination", and "reduction" should have had some sort of numerical value attached to them. I can take a closer look at the Plant Branch 316a study findings to see what was used to determine that they be granted the variance.

- "1. Substantial increase in abundance or distribution of any nuisance species or heat-tolerant community not representative of the highest community development achievable in receiving waters of comparable quality.
2. Substantial decrease of formerly indigenous species, other than nuisance species.
3. Changes in community structure to resemble a simpler successional stage than is natural for the locality and season in question.
4. Unaesthetic appearance, odor, or taste of the waters.
5. Elimination of an established or potential economic or recreational use of the waters.
6. Reduction of the successful completion of life cycles of indigenous species, including those of migratory species.
7. Substantial reduction of community heterogeneity or tropic structure. "

Source: NPDES Permit Renewal Application Package for Plant Branch, NPDES No. GA0026051, volume 1 of 3, Georgia Power, June 1997, page E-2

Karrie-Jo Robinson-Shell, P.E.



Karrie-Jo
Shell/R4/USEPA/US
08/15/2008 11:43 AM

To "Sanderson, Eric" <ELS@adem.state.al.us>
cc nuhfer.mark@epa.gov
bcc
Subject Re: Alabama Power - Barry Meeting Request

We will need more time to meet internally. I am going to suggest to my management we send you a 90-day extension letter.
Karrie-Jo Robinson-Shell, P.E.

-----"Sanderson, Eric" <ELS@adem.state.al.us> wrote: -----

To: Karrie-Jo Shell/R4/USEPA/US@EPA
From: "Sanderson, Eric" <ELS@adem.state.al.us>
Date: 08/15/2008 10:23AM
cc: "Dean, Glenda" <GLD@adem.state.al.us>
Subject: Alabama Power - Barry Meeting Request

Karrie-Jo,

ADEM and Alabama Power would like to have a conference call with you, Roland Ferry, Wayne Aronson, Paul Schwartz, and Mark Nuhfer, to discuss the proposed 316a Study Plan, and any other issues EPA may have for the proposed Barry Permit. Is EPA available for the proposed conference call on Monday, August 25th?

Thanks

Eric



"Sanderson, Eric"
<ELS@adem.state.al.us>

08/15/2008 10:09 AM

To: Karrie-Jo Shell/R4/USEPA/US@EPA
cc:
bcc:
Subject: Barry Steam Thermal Data

Karrie-Jo,

Attached is the temperature data you requested for the APCO Barry Plant. Please let me know if you have any questions.

Thanks

Eric



<<Barry 30 Minute Data for EPA.pdf>> Barry 30 Minute Data for EPA.pdf

Auburn University

Auburn University, Alabama 36849-5419

College of Agriculture

Department of Fisheries
and Allied Aquacultures
203 Swingle Hall

September 29, 2004

Telephone: (334) 844-4786
FAX: (334) 844-9208
United States of America

International Center
for Aquaculture and
Aquatic Environments
201 Swingle Hall

Mr. John D. Grogan
Alabama Power Company
P. O. Box 2641
Birmingham, AL 35291



Dear Mr. Grogan:

This letter is in regard to Alabama Power Company's request to the Alabama Department of Environmental Management (ADEM) for an increase in thermal limits (daily maximum of 112°F and a mean monthly maximum of 108°F) in the Mobile River downstream of the Barry Steam Electric Generating Plant (Plant Barry) in Mobile County, Alabama. At intervals dating back to the 1970's, I have been involved in research to determine the nature and extent of any adverse effects on the biotic community of the Mobile River caused by the heated water released from Plant Barry. The following activities summarize these efforts:

- 1974-1977 – Biological Effects Study, 316(a) Demonstration. Plant Barry. (Alabama Power Co. Undated).
- 1974-1976 – Impact of Heated Water on Aquatic Communities of Experimental Fish Channels, 1974-1976. Final Report (Lawrence and Bayne 1977).
- 1997 – Comparison of Condition of Mobile River near Plant Barry in 1970's (316(a) Demonstration) with Conditions in the 1990's (Discharge Information Zone Surveys) (Bayne 1997).
- 1999 – Biological Effects of the Barry Steam Plant Effluent in the Mobile River. Final Report (Webber et al. 1999).
- 2000 – 2003 – 316(a) Biological Study for Barry Steam Plant. (Bayne et al. 2003).

In each of these studies conducted at Plant Barry, aquatic scientists concluded that there was no evidence that appreciable harm resulted from the thermal discharge to a balanced indigenous community of shellfish, fish and wildlife in the Mobile River.

Mr. John D. Grogan

Page 2

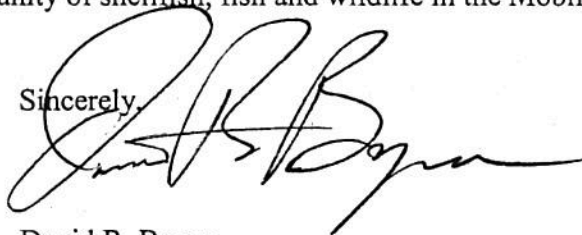
September 29, 2004

Following the last 316(a) study (Bayne et al. 2003) both ADEM and the U. S. EPA suggested that the Barry Plant thermal discharge may be responsible for the decline in density of larval fish and macroinvertebrates downstream of the discharge canal. In the case of larval fish, an ongoing 316(b) study has revealed that the cause of the decline in larval fish was the entrainment of these organisms in the intake water for Plant Barry. These entrained fish die in transit through the steam plant and they decompose and are absent in the Mobile River downstream of the discharge canal. The number missing downstream is close to the number known to be entrained.

The decline in macroinvertebrate densities downstream of the discharge canal may be, in part, caused by thermal influence. However, in my opinion, a decline in density of organisms does not signal "appreciable harm" as long as the community composition and structure is similar upstream and downstream of the heated discharge. With the possible exception of station 2AW just downstream of the mouth of the discharge canal, community structure and community health metrics were similar or superior at downstream locations compared to upstream reference locations. What would be of concern downstream of Barry Plant discharge would be benthic communities with reduced taxa, lower taxa diversities, increased density of the more tolerant organisms (e.g., oligochaetes and ceratopogonids) and absence of the more intolerant organisms. These were the conditions reported by Lawrence and Bayne (1977) for benthic communities in experimental channels receiving heated water from the Alabama Power Company's Greene County Steam Electric Generating Plant.

Based on phytoplankton densities and recent (since 1990's) chlorophyll *a* concentrations, the Mobile River in the vicinity of Plant Barry has increased substantially in primary production. In addition, there have been moderate increases in zooplankton densities and orders of magnitude increases in macroinvertebrate densities. Since these communities seem to be in good health, I believe that this reach of the Mobile River is in better overall condition today than it was in 1974 (Bayne 1997). This improvement has taken place while Plant Barry has been in operation. In my opinion, the continued operation of the Barry Plant within the proposed thermal limits will not cause appreciable harm to a balanced, indigenous community of shellfish, fish and wildlife in the Mobile River.

Sincerely,

A handwritten signature in black ink, appearing to read "David R. Bayne", written over a large, stylized, cursive flourish.

David R. Bayne
Professor

DRB/lhj

Curriculum Vita

Name: David Roberge Bayne

Education: B.A., 1963, Tulane University (Psychology)
1964, University of Alabama (Marine Biology)
M.S., 1967, Auburn University (Fisheries)
Ph.D., 1970, Auburn University (Aquatic Ecology)

Professional Experience:

<u>Date</u>	<u>Position and Work Description</u>
1991-present	Professor. Department of Fisheries and Allied Aquacultures, Auburn University, AL.
1984-1991	Associate Professor
1974-1984	Assistant Professor
	<u>Research.</u> Project Leader, Rivers and Reservoirs Project, involved in aquatic ecological research in ponds, streams and large impoundments.
	<u>Teaching.</u> General Limnology, Reservoir Limnology and Management of Aquatic Flora. Directing M.S. and Ph.D. student research.
1972-1974	Assistant Professor. Department of Fisheries and Allied Aquacultures, Auburn University. Served as resident fisheries advisor to the government of El Salvador, Central America, through Auburn University's International Center for Aquaculture.
1970-1972	Assistant Professor. Biology Department. Georgia College, Milledgeville, Georgia.
	<u>Research.</u> Water quality and plankton community studies in ponds receiving organic and inorganic enrichment.
	<u>Teaching.</u> General Biology, Physiology and Aspects of Aquatic Biology.

Honors, Awards and Offices:

Henry G. Good Memorial Award (Outstanding Graduate Student)
Certificate of Recognition--Republic of El Salvador, Ministry of Agriculture
American Men and Women of Science
Founder and First President, Midsouth Aquatic Plant Management Society, 1982
President, Midsouth Aquatic Plant Management Society, 1983
Board of Directors, Midsouth Aquatic Plant Management Society, 1984
Certificate of Appreciation--Midsouth Aquatic Plant Management Society, 1984
Evaluation Committee for the Kuwait Prize in Applied Sciences (Water Resources Development) 1995
Water Conservationist of the Year - 2004, Governor's Conservation Achievement Awards.

Professional Memberships:

Midsouth Aquatic Plant Management Society
Aquatic Plant Management Society, Inc.
American Fisheries Society
American Society of Limnology and Oceanography, Inc.
International Association of Aquatic Vascular Plant Biologists
North American Lake Management Society
Alabama Fisheries Association

Consulting and Service: (select)

U. S. Army Corps of Engineers; Florida Governor's Office; Bass Anglers Sportsman Society, Inc.; Tennessee Valley Authority; Morocco; U. S. Justice Department; SEPRO Corporation; Alabama Department of Environmental Management; Solutia Inc.; Olin Corporation; Upper Chattahoochee Riverkeeper; Alabama Attorney General's Office; Alabama Environmental Planning Council; Technical Task Force, Upper Warrior River Water Quality; West Point Lake Task Force; Alabama Water Resources Study Commission; Weiss Lake Conservation Task Force; Alabama Lake Standards Task Force; Alabama Clean Water Action Plan; West Point Lake Coalition; Rivers and Streams Nutrient Criteria Committee.

Current Research Projects:

Biological survey of Conecuh-Escambia Rivers near the waste outfall of nearby paper mill.
Limnological variables related to sport fish yield of Alabama lakes.
Urban impacts on biotic communities of small tributary embayments.
Biotic enhancement of water quality in intensive aquaculture.
Fate of PCB's in large Alabama Impoundments.
Nutrient and sediment loading of large river impoundments.

Scientific Publications: (select)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
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AUG 28 2008

Mr. James McIndoe, Chief
Water Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
P.O. Box 301463
Montgomery, Alabama 36130-1463

SUBJECT: Draft Permit Review
Alabama Power Company – Barry Steam Plant
NPDES Permit Number AL0002879

Dear Mr. McIndoe:

This letter is to notify you that the Environmental Protection Agency (EPA) will need additional time to complete its review of the draft National Pollutant Discharge Elimination System (NPDES) permit referenced above. The draft permit and application materials were transmitted by your office to EPA via e-mail on August 1, 2008. In accordance with Section IV(B)(3) of the Alabama Department of Environmental Management (ADEM)/EPA Memorandum of Agreement (MOA) and 40 Code of Federal Regulations § 123.44(a), EPA is providing written notice that it will use the full 90-day review period authorized by the MOA and federal regulations. EPA, Region 4 will make every effort to provide any comments or objections before October 30, 2008, when the 90-day review period ends.

If you have any questions, please contact Ms. Karrie-Jo Shell of my staff at 404/562-9308.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Giattina".

James D. Giattina
Director
Water Management Division

cc: Mr. John Grogan, Manager, Alabama Power Company



"Sanderson, Eric"
<ELS@adem.state.al.us>

10/15/2008 12:12 PM

To Karrie-Jo Shell/R4/USEPA/US@EPA

cc

bcc

Subject APCO Barry Steam Plant AL0002879 10-15-08.doc

Karrie Jo,

Attached is the updated Barry Permit which went to Public Notice and has incorporated the agreed upon Part IV requirements for the proposed study plan. Please let me know as soon as possible if it is acceptable to issue the permit. I appreciate your willingness to work with us to get these issues resolved.

Thanks again.



Eric APCO Barry Steam Plant AL0002879 10-15-08.doc

AL00002879

BARRY THERMAL STUDY

CE-QUAL-W2 ANALYSIS

2001 SIMULATION

October 15, 2002

$$0^{\circ}\text{C} + 32 = 32.0$$

$$\frac{2^{\circ}\text{C} \times 9}{5} + 32 = 35.6$$

$$\Delta T^{\circ}\text{F} = 3.6$$

$$\text{depth} = 5 \text{ feet} \times \frac{1 \text{ m}}{3.28 \text{ ft}} = 1.52 \text{ feet}$$

NRC $\Rightarrow \Delta T = 5^{\circ}\text{F}$ for artificial heat addition
to streams, & reservoir in Monte Basins

$$\text{PCA} \Rightarrow \Delta T^{\circ}\text{F} = 3.6^{\circ}\text{F}$$

$$T_{\text{upstream}} = 88.6 + 3.6 = 92.2 \quad \therefore \text{up to an inclusion Station 5}$$

Executive Summary

Alabama Power Company was issued an NPDES Permit for Barry Steam Plant on July 15, 1999. This Permit, as modified on March 26, 2002, requires under Part IV, D., and pgs. 18-19, the submittal of a 316(a) demonstration. The Barry Thermal Study, included herein, and the report entitled Biological Study for Barry Steam Plant NPDES Permit Number AL0002879, March 2003 satisfies this requirement.

The purpose of the Barry Thermal Study was to define the thermal Plume and zone of recovery during the study period January 1 – December 31, 2001. River temperatures were monitored and simulated over approximately 11 miles of the Mobile River extending from approximately five miles above the Plant thermal discharge to 6 miles downstream of the discharge.

The results of this study confirm the presence of rapid mixing of the thermal discharge from the Barry Plant with the Mobile River. By the time the thermal discharge has moved downstream 2.5 times the river width at the point of discharge, approximately 2/3 of the thermal rise above upstream ambient conditions was dissipated at the 5 foot depth based on the monthly average data collected for the hottest month during the study. The study showed that the maximum daily and monthly average temperatures continued to decline as the thermal plume moved downstream. The recovery zones monitored during the study, identified as sites 3, 4, and 5, showed a continuing decline in the temperature of the thermal plume, with the monthly average temperature during the hottest month of 2001 being only 2.4 °F above ambient upstream river temperatures at site 5, which is approximately 6 miles downstream.

The results of the model simulation indicated the model was generally able to predict the maximum monthly average river temperature at the 5 foot depth within approximately 1.5 °F and the maximum daily average temperature within approximately 4.4 °F. The model consistently under estimated the reduction in the maximum daily average river temperatures as the thermal plume moved downstream. The reduced model accuracy for predicting maximum daily average temperature is likely due the relatively short time period involved and the unaccounted for variables in the model such as barge traffic, which can significantly affect the daily thermal stratification on a daily basis.

In summary, the thermal monitoring and thermal modeling confirm rapid mixing of the Barry thermal discharge with the Mobile River. The monitored and simulated river temperatures, when coupled with the findings contained in the Biological Study for Barry Steam Plant NPDES Permit Number AL0002879, March 2003 confirm that there has been no appreciable harm to a balanced, indigenous community of shellfish, fish and wildlife from the thermal discharges from Barry Steam Plant.

Objective

The objective of this study is to simulate the temperature characteristics of the Mobile River near Alabama Power Company's (APC) Barry Steam Plant using CE-QUAL-W2 using data from the year 2001. This model was used to determine the impact of Barry's condenser discharge temperature on the portion of the Mobile River downstream of the steam plant. The CE-QUAL-W2 model was calibrated using data from 1997 and 1998 and the calibration parameters were left unchanged. The simulation area includes approximately 11 miles of the Mobile River upstream and downstream of the plant. Comparisons between observed and simulated temperatures are made at Sites 1, 2, 3, 4, 5, and at the intakes and discharge shown in Figure 1. Site 2 is defined as being located at a distance 2.5 times the river width, at the discharge, downstream, and at a depth of 5 feet.

Model

CE-QUAL-W2 is a two-dimensional hydrodynamic and water quality model. The model has been applied to numerous water bodies throughout the US, in addition to the Mobile River. The model is 2-D, consisting of laterally averaged components, and simulating flow and components in the vertical and longitudinal directions.

Development of Model Inputs

In order to accurately simulate the Mobile River, the model requires a detailed collection of input data. These data consist of river flow and stage, plant discharge flow rate and temperature, meteorological data, ambient river temperature, and river bathymetry. All of the input data sets were provided by APC. Minimal reformatting of the data was required, and gaps or blanks in the data sets were deleted. During the data gaps, the model linearly interpolates the data it requires, so results from these periods are not expected to be accurate.

River flow rate and stage – The Mobile River near Barry Steam Plant is in an area that is influenced by tides. It is also located in an area that includes the confluence and separation of multiple water bodies. Daily average river flow rates are calculated using USGS measurements at Coffeetown and at Claiborne and a discharge percentage curve developed by the USGS. The calculated average daily flow rates used in the model were provided by APC. The US Army Corps of Engineers maintains a stage gage at the intake of the Barry Steam Plant. The hourly readings from this gage used as the downstream elevation in the model were provided by APC.

Some minor adjustments were made to the river flow rate and the stage data to facilitate model computation. During high flow periods, the peak flow rates did not coincide with peak elevations, causing instability in the model. This is not unexpected because the flow rates are daily averages, while the stage elevations are hourly. The dates of the adjustments are January 20 to 27, January 31, February 17 to 21, and December 14 to 20, which are not during the critical summer periods.

Plant discharge rate and temperature – The Barry Steam Plant operating logs were used as the source for plant flow rates. The hourly values of the condenser flow rates were

used as the withdrawal and discharge values. The 15-minute temperature data at the bridge in the discharge canal were used as the plant discharge temperatures.

Meteorological – The required meteorological parameters are air temperature, dew point, wind speed, wind direction, cloud cover, and solar radiation. The meteorological data were obtained from a station located at the Barry Steam Plant. Cloud cover was estimated from the given solar radiation data. The time step of the meteorological data is one hour. Data for relative humidity were missing from 1/24/2001 10 AM until 1/31/2001 11 AM. A value of 72%, the average relative humidity for the year 2000, was used as the default value. Also missing was the wind direction beginning 1/30/2001. In its place, a default of 180 degrees was used, the average direction during January. Neither of these default values are expected to have a major effect on the simulation results.

River temperature – APC maintains temperature recorders at five different sites in the Mobile River and at the intake and discharge points shown in Figure 1. The temperatures were collected at 15-minute intervals. The upstream boundary condition water temperatures used in the model were Site 1 east and west average temperatures. The downstream boundary condition water temperatures used in the model were Site 5 east and west average temperatures.

Bathymetry – In 1997, detailed cross-sectional data of the Mobile River were collected for the initial development of the Barry Steam Plant CE-QUAL-W2 model. The same bathymetry (filename *bth_2536aphi.npt*) used in the calibrated model was used in this simulation. The grid consists of 25 layers and 36 segments.

Calibration

The model parameters calibrated for the 1997 and 1998 simulations, and used in the 2000 simulation, were left unchanged. The results presented here are from a simulation using the previously calibrated model and the year 2001 input data.

Results

The results of this simulation at Sites 2 through 5 can be seen in Figures 2 through 5. The maximum daily average and maximum average monthly plant discharge temperature was 109.8°F and 107.3°F, respectively. A summary of observed and simulated water temperatures at Sites 1, 2, 3, 4, 5, Intakes and Discharge is given in Table 1. All of the observed monthly average temperatures reported in Table 1 are computed from the available data sets provided by APC. The averaging excludes the numerous data gaps, most notably discharge temperatures from 6/5 to 7/17. The observed temperature data gaps are summarized in Table 2. Similarly, all of the simulated monthly average temperatures reported in Table 1 are of data sets computed using numerous interpolated periods to cover the input data gaps. The input data gaps are summarized in Table 3.

Table 1 CE-QUAL-W2 Results

Location	Observed Temperature, °F		Simulated Temperature, °F	
	Maximum Daily Average	Maximum Monthly Average	Maximum Daily Average	Maximum Monthly Average

Max Daily Observed *Max Monthly Observed* *Simulated* *Max Daily Simulated* *Max Monthly Simulated*

Site 1 <i>upstream</i>	88.6	87.3	88.1	86.6
Site 2	97.6	93.3	98.7	92.3
Site 3	96.6	93.2	98.3	92.0
Site 4	94.4	90.8	98.2	91.9
Site 5	92.9	89.7	97.3	91.2
Intake East	89.7	86.7	-	-
Intake West	90.8	87.2	-	-
Discharge	109.8	107.3	-	-

$\Delta S =$
 $T = 93$
 $T = 88$

Table 2 Observed Temperature Data Gaps

Location	Data Gaps
Site 1 East Top	4/29 – 5/2, 7/19 – 9/5
Site 1 West Top	1/1 – 2/6, 4/29 – 6/5, 7/19 – 9/5, 10/3 – 11/6
Site 2 East Top	1/11 – 2/7, 4/29 – 5/1, 7/18 – 9/5
Site 2 West Top	4/29 – 6/4, 10/3 – 11/6
Site 3 East Top	1/1 – 1/10, 4/29 – 5/2, 6/5 – 9/5, 11/7 – 12/31
Site 3 West Top	1/11 – 2/7, 4/29 – 5/2, 6/5 – 7/17
Site 4 East Top	1/4 – 2/6, 4/29 – 5/2, 6/5 – 10/2, 11/6 – 12/31
Site 4 West Top	1/1 – 1/3, 4/29 – 5/2, 9/6 – 10/2
Site 5 East Top	4/29 – 6/4, 11/7 – 12/31
Site 5 West Top	1/1 – 1/3, 4/29 – 5/2, 7/18 – 9/5
Intake East	1/1 – 1/3, 4/29 – 5/1, 10/2 – 11/6
Intake West	1/1 – 1/2, 4/29 – 5/1, 10/2 – 11/6
Discharge	1/1 – 1/3, 4/29 – 5/2, 6/5 – 7/17

Table 3 Input Data Gaps

Input data	Data Gaps
Upstream flow	-
Upstream temperature	4/29 – 5/2
Plant inflow	-
Plant outflow	-
Plant outflow temperature	1/1 – 1/3, 4/29 – 5/2, 6/5 – 7/17
Downstream elevation	-
Downstream temperature	4/29 – 5/2

A color animation of the simulated plume along the entire model region through the whole year is provided as a separate file. All of the files referred to in this report are included on a CD, including the executable model, input and output data files, and results comparison spreadsheets.

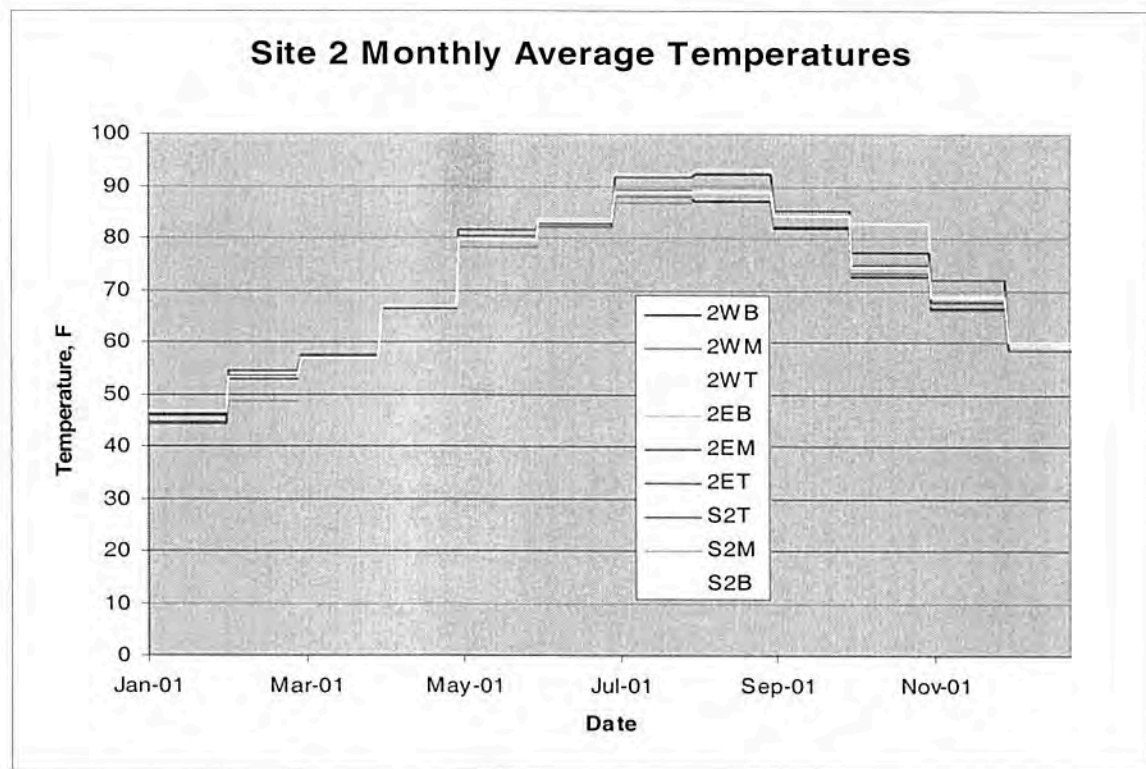
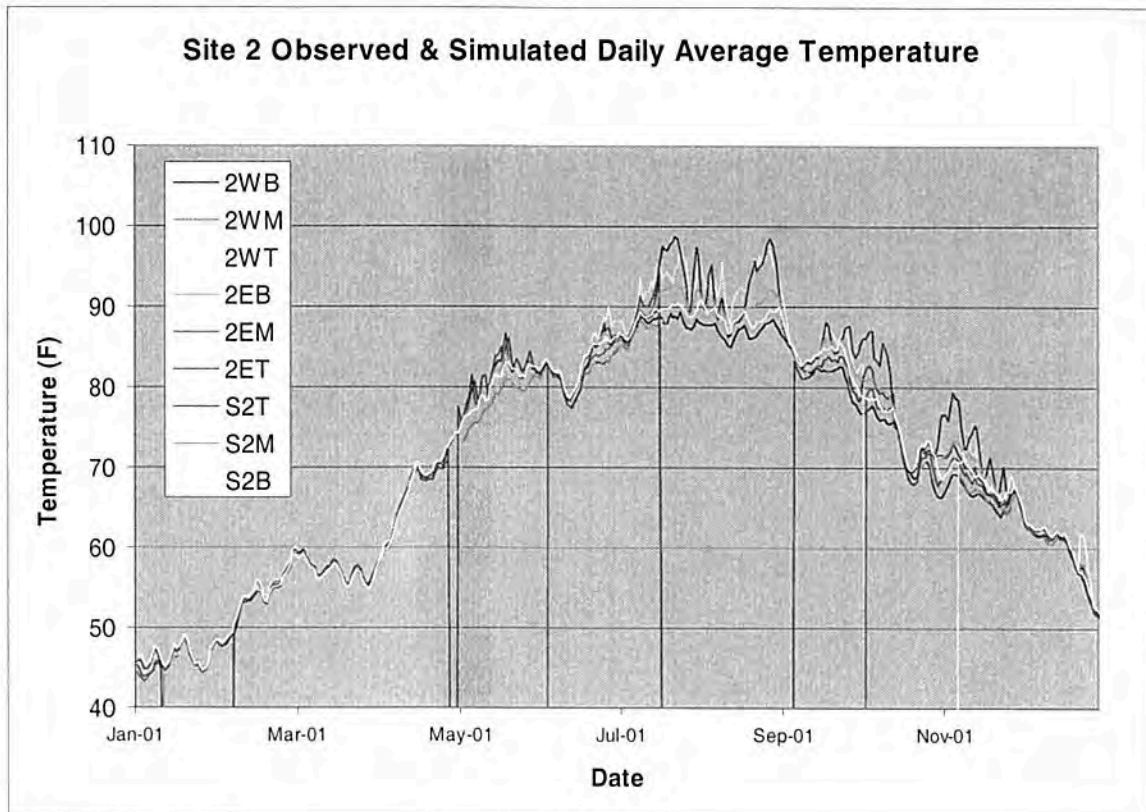


Figure 2 Site 2 Observed & Simulated Daily Average and Monthly Average Temperature (2 = site number; W and E = west and east; B, M, T = bottom, middle, top; S = simulated)

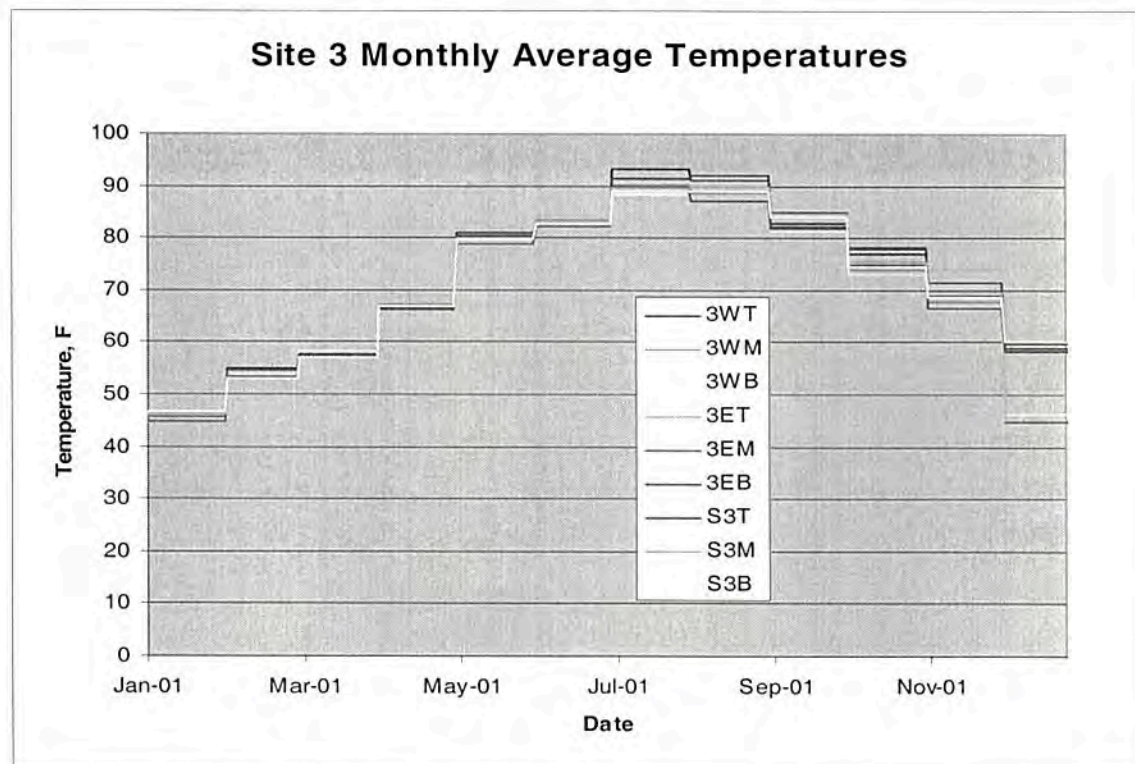
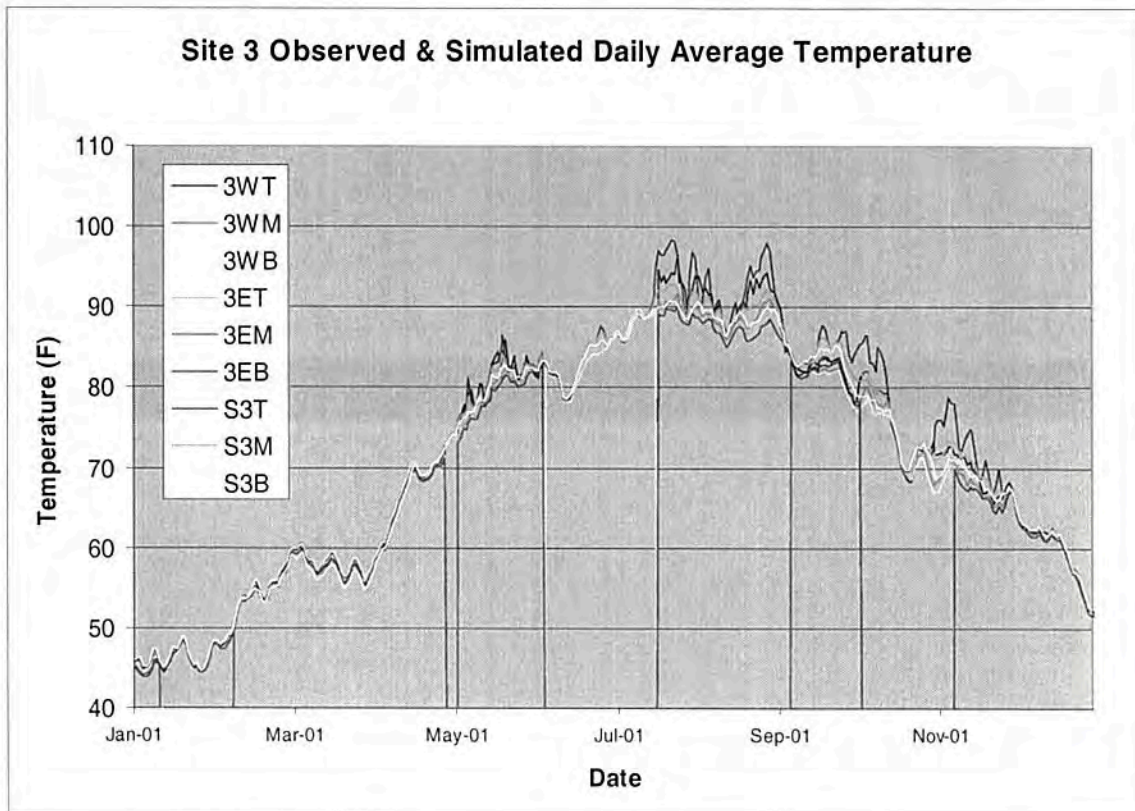


Figure 3 Site 3 Observed & Simulated Daily Average and Monthly Average Temperature (3 = site number; W and E = west and east; B, M, T = bottom, middle, top; S = simulated)

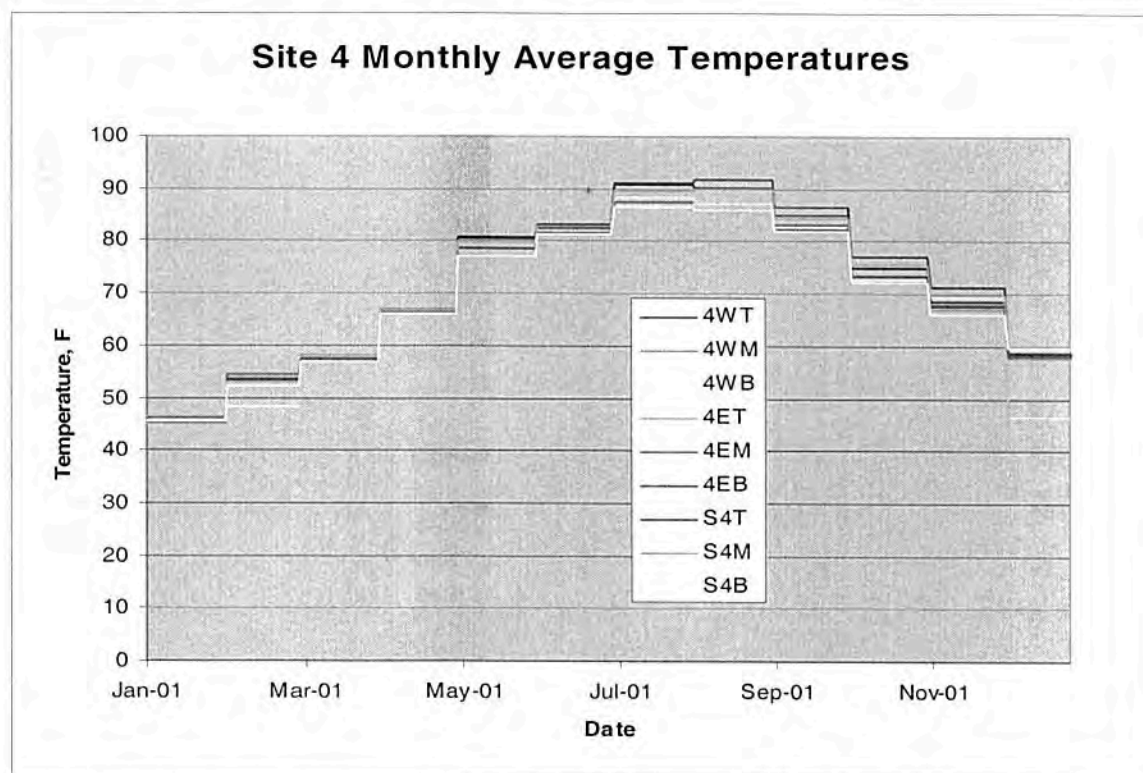
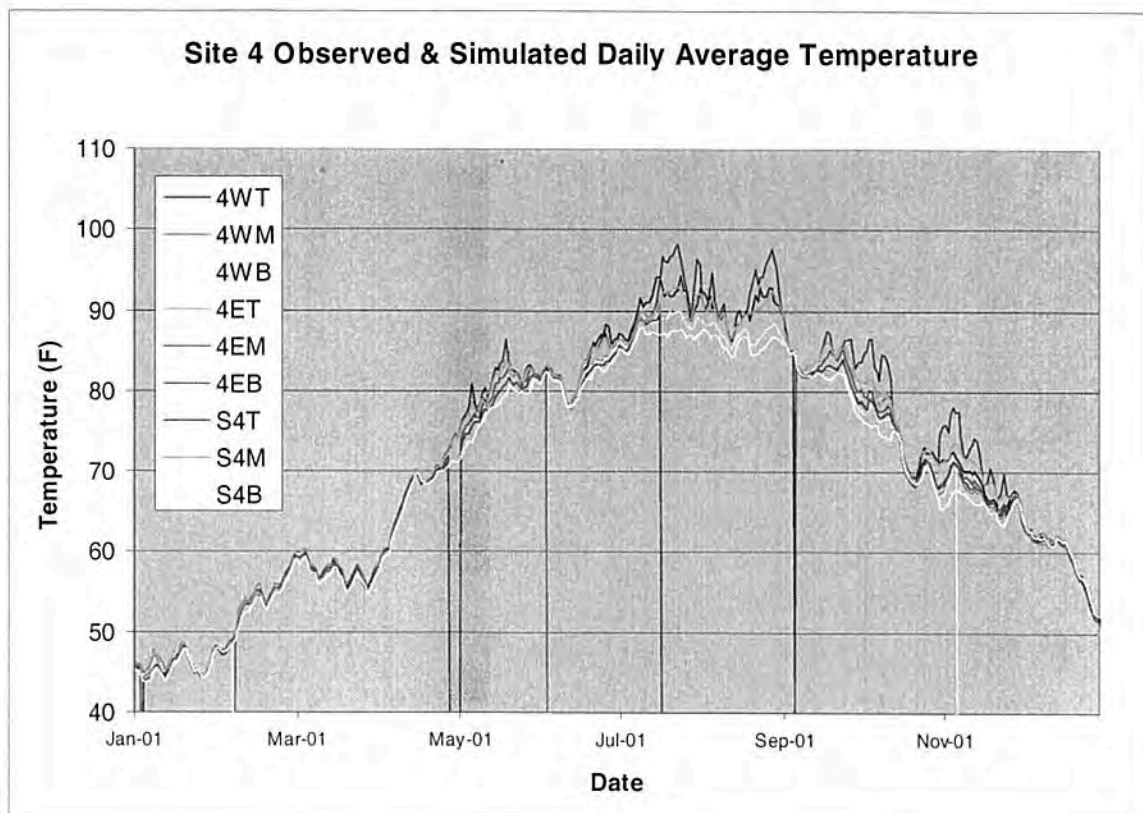


Figure 4 Site 4 Observed & Simulated Daily Average and Monthly Average Temperature (4 = site number; W and E = west and east; B, M, T = bottom, middle, top; S = simulated)

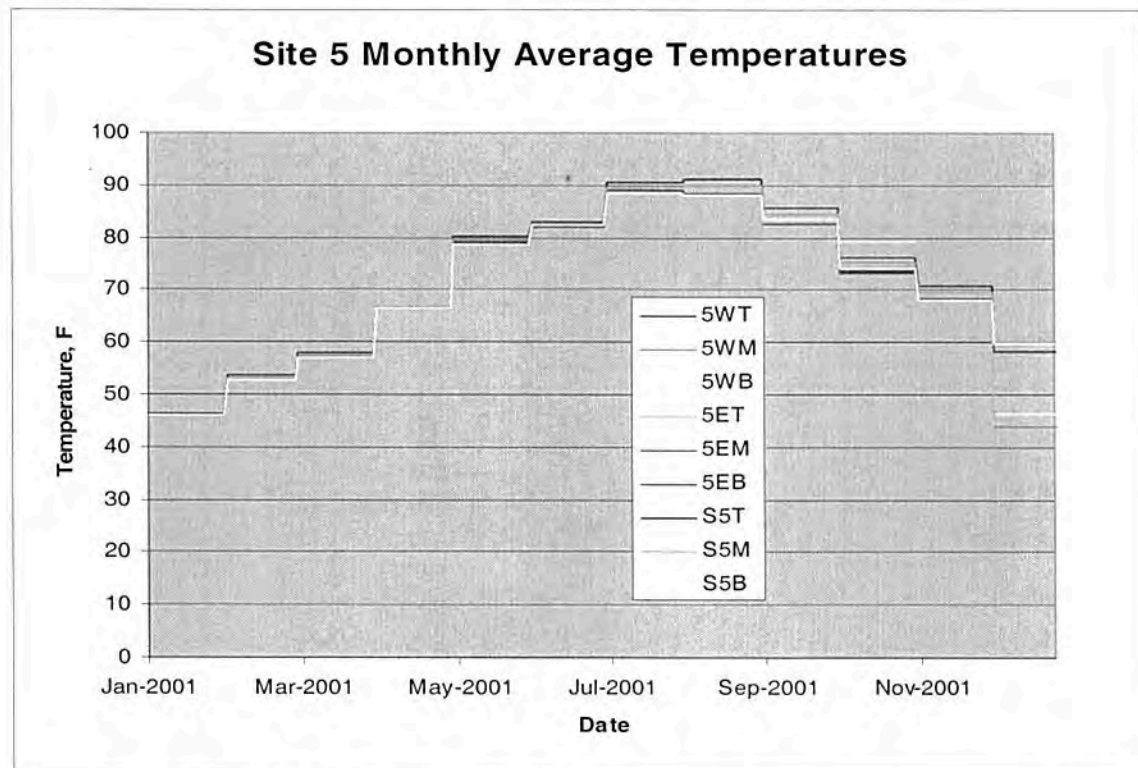
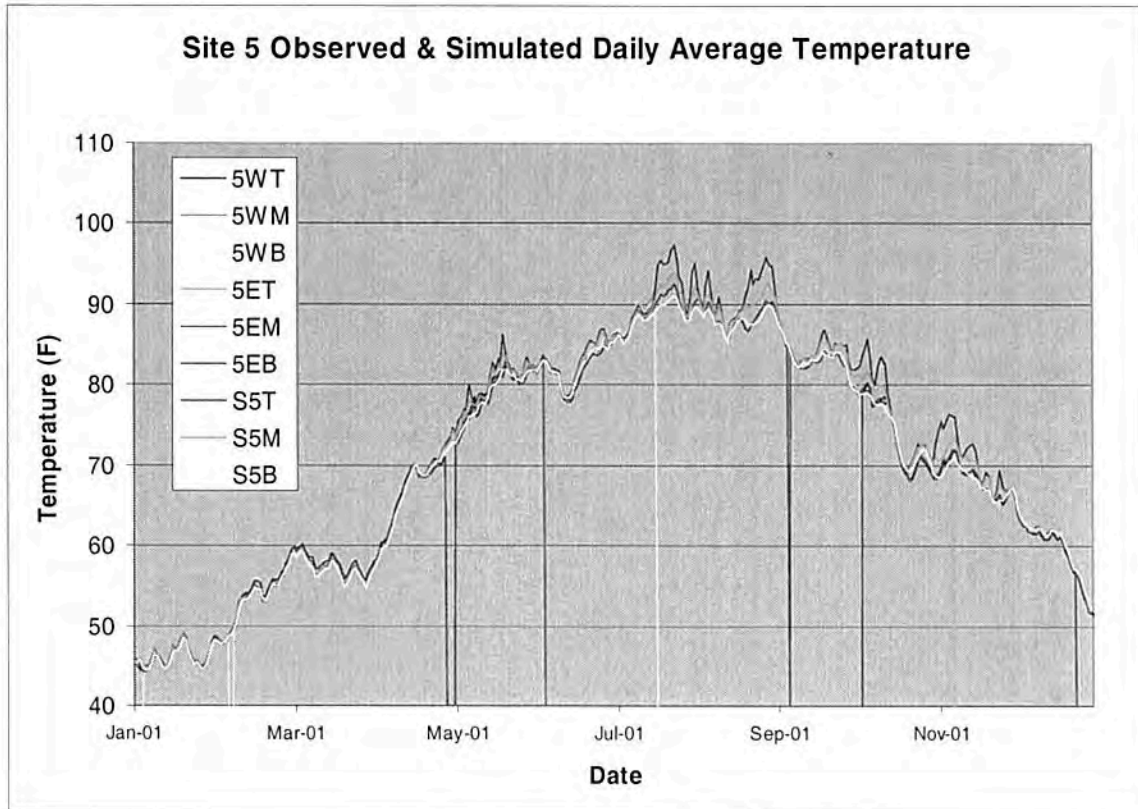


Figure 5 Site 5 Observed & Simulated Daily Average and Monthly Average Temperature (5 = site number; W and E = west and east; B, M, T = bottom, middle, top; S = simulated)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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APR 29 2009

Mr. Eric Sanderson
Chief, Industrial Permits Section
Water Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
P.O. Box 301463
Montgomery, Alabama 36130-1463

SUBJECT: Alabama Power - Barry Steam Plant
Revised Clean Water Act Section 316(a) Study Plan
NPDES Permit No. AL0002879 - Barry Steam Power Plant

Dear Mr. Sanderson:

The purpose of this letter is to transmit the Environmental Protection Agency's (EPA's) comments on the revised Alabama Power Company (APC) Clean Water Act (CWA) Section 316(a) Study Plan (Study Plan). The Study Plan lacks detail, and in its current form is not likely to generate information sufficient to support a Section 316(a) variance determination for the next permit cycle. EPA's comments are submitted in order to ensure that the Study Plan will generate information sufficient to support a determination of whether the Barry Steam Plant's thermal variance under Section 316(a) of the CWA can be approved in its next National Pollutant Discharge Elimination System (NPDES) permit. The Study Plan was submitted in accordance with Section IV.C of APC's current NPDES permit sent to you in a letter dated March 17, 2009, and it was forwarded to Karrie-Jo Shell of my staff in an e-mail dated April 1, 2009, from Scott Ramsey of your staff. Section IV.C of the permit states:

"Within 60 days of the permit effective date, the permittee shall prepare and submit for Department review a study plan which outlines how the permittee will conduct water quality and biological assessments necessary to assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on the Mobile River. The proposed study plan shall be designed to supplement the benthic macroinvertebrate, adult fish community, and water chemistry portions of the studies as performed by the permittee in 2001. The study shall also be designed to include additional downstream stations to demonstrate recovery, and differentiate (if possible) the cumulative effects of multiple impacts (salt water intrusion, cooling water intake, thermal discharge, etc.) on the receiving stream to determine if a balanced, indigenous population of fish and shellfish exist in the receiving stream compared to a reference location in accordance with Clean Water Act Section 316(a). Results will be analyzed using statistical analyses, if possible."

EPA has reviewed the revised Study Plan and has comments, which should be addressed in the plan prior to APC commencing sampling.

In short, the scope of the Study Plan states that “The study shall also be designed to include additional downstream stations to demonstrate recovery, and differentiate (if possible) the cumulative effects of multiple impacts (salt water intrusion, cooling water intake, thermal discharge, etc.) on the receiving stream.” The plan outline, however, lacks sufficient detail to determine if the stated objectives will be met through application of this study. Additionally, the plan outline is not designed such that a determination can be made as to whether the thermal discharge meets the criteria for approval of a variance under Section 316(a) of the CWA. Specifically, it is unclear from the outline of the proposed sampling plan how the additional data will be analyzed to demonstrate that a balanced, indigenous population (BIP) of fish, shellfish and wildlife is being protected within the defined study area. Under Section 316(a), it is an applicant’s burden to demonstrate that a thermal variance will assure protection of a BIP. If EPA’s comments on the Study Plan are not addressed, it is likely that EPA will object to issuance of a 316(a) variance during the next permit cycle.

EPA recognizes that, under 40 CFR Section 125.73(c), existing sources seeking variance renewal are not typically required to conduct the same detailed, comprehensive studies required under Sections 125.72(a) and (b). Also, under Section 125.73, existing sources can base their demonstration on a lack of appreciable harm instead of completing predictive studies. However, under Section 125.72(c), the type of detailed studies contemplated under 125.72(a) and (b) can be required whenever determined to be necessary. After examining the record (to the extent that it can be recreated) of prior 316(a) variance determinations for Plant Barry, EPA has significant concerns regarding the need for a more thorough examination and definition of the BIP, the identification of Representative Important Species (RISs), and a closer examination of whether the variance is protective. Given the thinness of the available record for prior variance determinations, which go back many years and extend to when EPA was the permitting authority for Plant Barry, EPA believes a more detailed, comprehensive study is needed. EPA acknowledges that APC has in the past collected a substantial amount of data in support of its variance. APC may use existing data in completing its study and may incorporate the existence of such data into the Study Plan design; however, the existing data needs to be evaluated and presented in the context of a BIP definition that the existing record does not adequately provide.

Section 316(a) of the CWA contains the term “BIP” but does not define it. However, 40 Code of Federal Regulations (C.F.R.) § 125.71(c) defines the term “balanced, indigenous community”¹ as:

“A biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of

¹ “Balanced, indigenous community” and BIP are equivalent terms.

wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act; and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a)."

The Environmental Appeals Board stated in its decision in *In Re Dominion Energy Brayton Point, LLC*, 12 E.A.D. 490 (2006) ("Brayton Point"), "this definition clearly envisions a consideration of more than the population of organisms currently inhabiting the water body. In this vein, although it permits inclusion of certain 'historically non-native species' that are currently present, it explicitly excludes certain currently present species whose presence or abundance is attributable to avoidable pollution or previously-granted section 316(a) variances."

Page 557 of the Brayton Point EAD goes on to further state that a BIP "can be the indigenous population that existed prior to the impacts of pollutants, not solely the current populations of organisms."

To the question of how a permittee should identify a BIP in an area that has been altered by impacts from an existing thermal discharge, the Brayton Point EAD points out that it may be appropriate to use a nearby water body unaffected by the existing thermal discharge as a reference area. Examination of an appropriate reference area may be appropriate in this case.

The definition of "balanced, indigenous community" at 40 C.F.R. § 125.71(c) contains several key elements. To be consistent with the regulations, each of these key elements should be specifically addressed in the demonstration, and the Study Plan should be designed to generate information relevant to these elements. Those elements include: (1) "a population typically characterized by diversity at all trophic levels;" (2) "the capacity to sustain itself through cyclic seasonal changes;" (3) "presence of necessary food chain species;" (4) "non-domination of pollution-tolerant species;" and (5) "indigenous." Each of these elements is discussed in more detail below:

1. "A population typically characterized by diversity at all trophic levels" means that all of the major trophic levels present in the unaffected portion of the river should be present in the heat affected portions. EPA recognizes that community structure differences will occur, however, the number of species represented in each trophic level in the unaffected portions should be reasonably similar in the heat affected portions of the river. Sampling and analysis of fish and invertebrate communities should be done such that the major trophic levels are identified and represented by reasonably similar species distributions. Also, the Study Plan should be expanded to include some observations of wildlife (i.e., water fowl, mammals, amphibians, etc.) both upstream and immediately downstream of the discharge point that may be impacted by the thermal discharge.

2. “The capacity to sustain itself through cyclic seasonal changes” means that any additional thermal stress will not cause significant community instability during times of natural extremes in environmental conditions. Community data should be collected during normal seasonal extremes as well as during optimal seasonal conditions. Data should be compared between heat affected and unaffected portions of the river to account for normal community changes corresponding with change in season.
3. “Presence of necessary food chain species” means that the necessary food webs remain intact so that communities will be sustaining. We believe that exhaustive food web studies are not necessary provided that invertebrate, fish and wildlife communities are otherwise healthy, i.e., represented by sufficiently high species diversity and abundance (appropriate for that portion of the river) for the identified trophic levels and sustaining through normal seasonal changes.
4. “Non-domination of pollution-tolerant species” means that in the case of a thermal effluent, community assemblages in heat affected portions of the river dominated by heat tolerant species do not constitute a BIP. EPA recognizes that because all species have varying levels of thermal tolerance, communities in the heat affected portions of the river may possess altered assemblages in terms of species presence and abundance. All community data should be collected, analyzed and presented to clearly demonstrate that affected communities have not shifted to primarily heat tolerant assemblages.
5. “Indigenous” has been further clarified in the regulations: “Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial, irreversible environmental modifications. Normally, however, such a community will not include species whose presence is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act: and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a).” EPA recognizes that non-indigenous species are present in most aquatic systems in the U.S. All community data should be analyzed and presented to demonstrate that community assemblages in the heat affected portions of the river are not significantly different from non-affected communities with regard to the number of non-indigenous species in the assemblages.

In addition to the foregoing components of the BIP definition, the Study Plan should also include provisions for the identification of Representative Important Species (e.g., a list of threatened, endangered, thermally sensitive, or commercially or recreationally valuable species in up- and down-stream of the study area), as contemplated in 40 C.F.R. §125.72(b). 40 C.F.R. § 125.71(b) defines RIS as “species which are representative, in terms of their biological needs, of a balanced, indigenous community of shellfish, fish and wildlife in the body of water into which a discharge of heat is made.”

To reiterate, in order to ensure that APC's Study Plan is adequate to demonstrate that the Barry Steam Plant should get continuance of a Section 316(a) variance during the term of its next NPDES permit, EPA requests the opportunity to review a revised 316(a) plan prior to APC commencing the study.

Please feel free to contact me at (404) 562-9390 if you have any questions regarding our comments.

Sincerely,

Mark Nuhfer, Chief
Municipal and Industrial NPDES Section
Pollution Control and Implementation Branch
Water Protection Division

cc: Mr. John Grogan, Manager
Alabama Power Company



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 29 2008

Mr. James McIndoe
Chief
Water Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard
P.O. Box 301463
Montgomery, Alabama 36130-1463

SUBJECT: Revised Draft Permit Review
Alabama Power Company – Barry Steam Plant
NPDES Permit Number AL0002879

Dear Mr. McIndoe:

This letter is to notify you that the Environmental Protection Agency (EPA) has completed our review of the revised draft National Pollutant Discharge Elimination System (NPDES) permit referenced above. EPA received the draft permit on August 1, 2008, via an e-mail from Wayne Holt of your staff to Karrie-Jo Shell. Per our request, additional information regarding this facility was received by our office on August 15, 2008. On August 27, 2008, EPA participated in a conference call with Alabama Power and Alabama Department of Environmental Management (ADEM) to discuss historical Clean Water Act (CWA) Section 316(a) studies, revisions to the draft permit and fact sheet, and ADEM's submittal of additional supporting permit application information for EPA's review. Also, during the call, Alabama Power representatives agreed to work with EPA and ADEM to develop additional Section 316(a) studies on macroinvertebrates and adult fish, which are to be conducted during the next permit term. ADEM agreed to send a revised draft permit and fact sheet, as well as a CWA Section 316(a) studies completed by Dr. Bayne of Auburn University. EPA subsequently sent a letter to ADEM dated August 28, 2008, stating we would require an additional 90 days, per the EPA/ADEM Memorandum of Agreement, for review of these materials. ADEM sent EPA a revised draft permit and fact sheet via e-mail from Eric Sanderson to Karrie-Jo Shell on October 15, 2008. We are providing the following information to assist you in evaluating the thermal impacts of this discharge.

- CWA Section 316(a) pertains specifically to point sources with thermal discharges. It authorizes the EPA or a state (if it has been granted authorization of the NPDES program) to impose alternative effluent limitations for the control of the thermal component of a discharge than would otherwise be required under sections 301 or 306 of the CWA.

Regulations implementing Section 316(a) are codified at 40 C.F.R. Part 125, subpart H. These regulations describe the criteria and standards to be used to determine whether or

not alternative limitations (i.e. a thermal variance from the otherwise applicable effluent limit) should be authorized. In short, before a thermal variance can be allowed, 40 C.F.R. §§ 125.72 and 125.73 require the permittee to demonstrate that the otherwise applicable thermal discharge effluent limit is more stringent than necessary to assure the protection and propagation of the balanced, indigenous population (BIP) and also requires the permittee to “show” that, after consideration of “cumulative impacts of its thermal discharge together with all other significant impacts on the species affected”, the variance will assure the protection and propagation of a BIP. (See 40 C.F.R. § 125.73(a)). In doing so, a permittee for an existing source may base its demonstration on the “absence of prior appreciable harm in lieu of predictive studies.” (See 40 C.F.R. §125.73(c)(1)). The regulations at 40 C.F.R. §§125.73(c)(1)(i)-(ii) further state that “in determining whether or not prior appreciable harm has occurred the Director shall consider the length of time in which the applicant has been discharging and the nature of the discharge.”

An applicant’s CWA Section 316(a) demonstration should identify the organisms comprising the BIP to be used to ensure that the thermal component of the discharge assures the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in and on that body of water into which the discharge is to be made.

40 CFR Section 125.71(c) defines BIP as:

“a biotic community typically characterized by diversity, the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by lack of domination by pollution tolerant species. Such a community may include historically non-native species introduced in connection with a program of wildlife management and species whose presence or abundance results from substantial irreversible environmental modifications. Normally however, such a community will not include species whose presence or abundance is attributable to the introduction of pollutants that will be eliminated by compliance by all sources with section 301(b)(2) of the Act; and may not include species whose presence or abundance is attributable to alternative effluent limitations imposed pursuant to section 316(a).”

The Environmental Appeals Board stated in its decision in In Re Dominion Energy Brayton Point, LLC., 12 E.A.D. 490 (2006)(“Brayton Point”), “this definition clearly envisions a consideration of more than the population of organisms currently inhabiting the water body. In this vein, although it permits inclusion of certain ‘historically non-native species’ that are currently present, it explicitly excludes certain currently present species whose presence or abundance is attributable to avoidable pollution or previously-granted section 316(a) variances.”

Page 557 of the Brayton Point EAD goes on to further state that a BIP “can be the indigenous population that existed prior to the impacts of pollutants, not solely the current populations of organisms.”

To the question of how a permittee should identify a BIP in an area that has been altered by impacts from an existing thermal discharge, the Brayton Point EAD points out that it may be appropriate to use a nearby water body unaffected by the existing thermal discharge as a reference area.

- An applicant's CWA Section 316(a) demonstration should identify and submit data and/or information on the thermal tolerance ranges and known spawning areas in the study area(s) for each life stage (e.g., larval, juvenile and adult) of each species selected as a Representative Important Species (RIS) or for each species selected to be in the BIP. When bioassessment indices are used the permittee must provide a detailed explanation of the methodology used to develop the index.

40 C.F.R. § 125.72(b) requires permittees to include information on Representative Important Species (RIS) in the Section 316(a) demonstration. In addition, this regulation states: "In selecting representative important species, special consideration shall be given to species mentioned in applicable water quality standards." 40 C.F.R. § 125.71(b) defines RIS as "species which are representative, in terms of their biological needs, of a balanced, indigenous community of shellfish, fish and wildlife in the body of water into which a discharge of heat is made."

Identification of thermal tolerance ranges is necessary in order to determine the temperature above which an organism experiences a certain level of adverse effects and thereby to develop proper Section 316(a) variance conditions to reasonably protect the most sensitive life stage of the most sensitive species.

An example of how thermal tolerance ranges were used effectively is the NPDES permit for the Brayton Point power plant. In that case, EPA-Region 1 selected temperature thresholds to estimate the volume of the receiving water body that would not exceed critical threshold temperatures. EPA Region 1 also estimated the duration of the exceedance that would result under different thermal discharge scenarios. In turn, EPA Region 1 estimated a minimum percentage of the receiving water body that could be impacted due to the facility's thermal discharge and still allow for the survival of a sufficient number of juvenile species for recovery and maintenance of the BIP.

- 40 C.F.R. § 125.73(c)(1) addresses how existing sources may make a demonstration for a 316(a) variance based on the "absence of prior appreciable harm. Specifically, subpart (c)(1) states that such a demonstration shall show:

"(i) That no appreciable harm has resulted from the normal component of the discharge taking into account the interaction of such thermal component with other pollutants and the additive effect of other thermal sources to a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge has been made; or

(ii) That despite the occurrence of such previous harm, the desired alternative effluent limitations (or appropriate modifications thereof) will nevertheless assure

the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made.”

The term “appreciable harm” is not defined in the regulations; however, the burden of proof is on the permittee to make a demonstration that assures that the BIP will be maintained. Region 4 has used the following criteria as indicators of the occurrence of “appreciable harm”:

1. Substantial increase in abundance or distribution of any nuisance species or heat-tolerant community not representative of the highest community development achievable in receiving waters of comparable quality.
2. Substantial decrease of formerly indigenous species, other than nuisance species.
3. Changes in community structure to resemble a simpler successional stage than is natural for the locality and season in question.
4. Unaesthetic appearance, odor, or taste of the waters.
5. Elimination of an established or potential economic or recreational use of the waters.
6. Reduction of the successful completion of life cycles of indigenous species, including those of migratory species.
7. Substantial reduction of community heterogeneity or trophic structure.

We request that you, in the final issuance of this permit, consider this information and consult with the permittee regarding their CWA Section 316(a) demonstration and its conformance with applicable state and federal regulations. If you have any questions, please contact Ms. Karrie-Jo Shell at 404/562-9308.

Sincerely,



James D. Giattina
Director
Water Management Division

cc: Mr. John Grogan, Manager
Alabama Power Company

MAY 20 1997

REF: 4WM-SWPFB

Mr. James H. Coles, Acting Chief
Industrial Branch
Water Division
Alabama Department of Environmental
Management
P.O. Box 301463
Montgomery, AL 36103-1463

SUBJ: NPDES Overview: 316(a) Issues

Dear Mr. Coles:

This letter is in response to a request you made during a March 3, 1997, conference call between you, Darryl Williams, Environmental Engineer, of my staff, and Brad Mahanes, National Lead for Energy Sector CWA Enforcement Issues at EPA Headquarters. You requested that we write to you explaining the applicability of state water quality standards (WQS) as they relate to Clean Water Act (CWA) Section 316(a) variances for thermal effluent limitations in NPDES permits.

The language at § 316 and § 303(h) of the CWA clarifies that the thermal component of point source discharges is subject to state WQSS and the variance procedure established at § 316(a). Section 316(a) provides for a variance as follows:

[w]ith respect to any point source otherwise subject to the provisions of section 1311 [301] or section 1316 [306] of this title, whenever the owner or operator of any such source, after opportunity for public hearing, can demonstrate to the satisfaction of the Administrator (or, if appropriate, the State) that any effluent limitation proposed for the control of the thermal component of any discharge from such source will require effluent limitations more stringent than necessary to assure [protection] ..." (emphasis added).

Since effluent limitations in a permit may be both technology-based and water quality-based (see § 502(11)), the variance referred to in § 316(a) applies to both technology-based thermal effluent limitations under § 301 and § 306 and to water quality-based effluent limitations under § 303.

Should a permittee desire that thermal effluent limitations in its NPDES permit reflect those under an existing § 316(a) variance, the permittee must resubmit a petition (with appropriate supporting documentation) for alternate thermal limitations concurrent with a timely permit application. See 40 C.F.R. § 122.21(m)(6). This submittal must meet the requirements of 40 C.F.R. Part 125 Subpart H. A complete application requires

inclusion of data and information adequate to support issuance of the variance. For example, the permittee must provide data to assure the issuing agency that the modified requirement will nonetheless protect aquatic life and wildlife. Regulations establishing public notice requirements for applications for § 316(a) variances are found at 40 C.F.R. § 124.57(a)(1).

In the case of Alabama Power Company Barry Steam Plant, you indicated that the copy of the initial § 316 study conducted back in the 1970s contains no discussion on environmental impact, conditions, limitations, etc. The facility's existing NPDES permit establishes no numeric limitation for the discharge of heat, only requiring monitoring for temperature. You have also stated, however, that currently there is evidence of an adverse environmental impact downstream of the discharge point. This identification of an adverse impact is based on DIZ (Discharge Information Zone) studies conducted by two other industrial facilities located approximately one mile downstream of Barry. The Fact Sheet indicates that existing permit conditions (and the absence of certain limitations) was based on the supposition that no changes in plant operations have occurred over the years; thus, the "variance" has been continued over from permit to permit.

In light of the evidence of adverse impact, it is strongly recommended that the following information be obtained from the permittee petitioning for the alternate thermal effluent limits in order for your office to make a determination on the variance:

- 1) thermal map identifying the area of thermal plume influence,
- 2) identify the distribution and abundance of thermally tolerant species,
- 3) identify the distribution and abundance of normal species not impacted by the thermal plume,
- 4) identify the zone of recovery; temperature profiles, species distribution and abundance,
- 5) identify the zone of free passage.

If you have any comments or questions, please contact Darryl Williams of my staff at (404) 562-9297 or Brad Mahanes, EPA Headquarters at (202) 564-2879.

Sincerely,

Douglas F. Mundrick, P.E., Chief
Surface Water Permits and
Facilities Branch
Water Management Division

cc: Brad Mahanes (OW)
Kevin Smith (EAD)
David Gravelese (OGC)

Williams DCW 5/15
Childress _____



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

May 28, 1999

4WM-SWPFB

Ms. Glenda L. Dean
Industrial Section
Water Division
Alabama Department of Environmental Management
1751 Cong. W.L. Dickinson Drive
P.O. Box 301463
Montgomery, Alabama 36130-1463

RE: NPDES Revised Draft Permit #AL0002879
Alabama Power Company - Barry Steam Plant

Dear Ms. Dean:

This letter is a follow-up to our telephone conversation on Thursday, May 27, 1999.

EPA has completed its review of the revised draft National Pollutant Discharge Elimination System (NPDES) permit for the above referenced facility and is providing our comments on this permit. These comments include potential objections to the issuance of this permit under the authority of Section III.C. of the Alabama/EPA NPDES Memorandum of Agreement (MOA). These potential objections are based on the following:

The fact sheet indicated that the receiving water for the effluent of this facility is classified as Fish and Wildlife. Regulation 335-6-10-.09(4)(e)3.(iv) of the Alabama Department of Environmental Management Administrative Code provides specific criteria for temperature to be met for waters classified as Fish and Wildlife. Specifically, it limits the maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat by a discharger to no more than 4° Fahrenheit in coastal or estuarine waters during the period from October through May and no more than 1.5° Fahrenheit during the period from June through September.

The current revised draft permit does not meet the Fish and Wildlife Use Classification water quality temperature standard for the effluent of outfall DSN001. Thus the issuance of this permit with an inappropriate limitation on temperature of cooling water and cooling tower blowdown would be a violation of 40 C.F.R. §122.41(d)(1).

To resolve these potential objections, the permit must be modified to incorporate appropriate changes. The State should make the following revisions to the permit language and/or fact sheet, as appropriate:

- 1) 40 C.F.R. §124.8(b)(4) requires that the applicable Water Quality Standards and Effluent Standards applied to the discharge be referenced in the fact sheet. Therefore, the following information should be included in the fact sheet.

"Alabama Water Quality Standards:

The thermal component of this discharge is subject to compliance with water quality standards criteria for warm water aquatic life as provided in Section 335-6-10-.09(4)(e)3.(iv) of the Alabama Administrative Code. The maximum in-stream temperature rise above ambient water temperature due to the addition of artificial heat shall not exceed 4° Fahrenheit during the period from October through May, nor shall the rise exceed 1.5° Fahrenheit during the period from June through September."

- 2) As a Section 316(a) thermal variance has not been approved as of yet for this permit renewal, the permit must contain the following thermal limitations in Part I.

"Instantaneous maximum discharge temperature shall not exceed 4° Fahrenheit above the ambient water temperature during the period from October through May, nor shall the rise exceed 1.5° Fahrenheit above the ambient water temperature during the period from June through September. (Water Quality Standard (WQS) criterion)."

As an alternative, interim limits may be developed by ADEM and applied by the permit should the permittee wish to pursue a Section 316(a) thermal variance demonstration. These interim limits may apply only for the period of time necessary to complete the required 316(a) studies. In this case, the water quality standard effluent limit noted above must become effective within 3 years of the effective date of the permit, unless a 316(a) thermal variance is granted which would determine alternate limits to be included in a reissued permit.

Should the State wish to pursue the above alternative, EPA recommends that certain studies be completed to evaluate whether a Section 316(a) variance is justified. For example, ADEM may wish to use the following language in the permit:

The permittee shall design and submit specific details for review, modification and approval by the permit issuing authority and the Environmental Protection Agency; and implement approved studies to document the extent of the thermal effects of the discharge on the indigenous population of shellfish, fish, and wildlife in and on the receiving water body (the Mobile River). Such study shall be in conformance with "Draft Interagency 316(a) Technical Guidance Manual and Guide for Thermal Effects Sections of Nuclear Facilities Environmental Impact Statements." U.S. Environmental Protection Agency, May 1, 1997. Not later than 18 months after the effective date of the permit, the permittee shall submit:

- a) Data collected and a summary thereof;
- b) An evaluation of such data; and
- c) A discussion of how the study results and/or any other information presented prove that a less stringent thermal effluent limitation, than that provided in Part I of this permit, will assure "the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife in and on the receiving water body." The study design shall address anadromous fish migration and larval survivability and benthic macro-invertebrate impacts. Two anadromous species which shall be assessed will be the Gulf sturgeon and the striped bass.

Should the permittee decide not to pursue the above mentioned study, an implementation schedule shall be submitted, not later than six months after the permit's effective date, to construct cooling towers or other facilities to meet the requirements of Part I of this permit. This schedule shall ensure compliance with the water quality effluent limitations noted in item 2 above, before the expiration date of the permit. Upon approval of the implementation schedule, the permittee shall expeditiously undertake construction in accordance with such schedule.

Please note that failure to satisfactorily address EPA's above comments will result in EPA's objection to the issuance of this NPDES permit. In accordance with the Alabama/EPA NPDES MOA and regulations at 40 C.F.R. Parts 122 and 123, EPA requests that the Alabama Department of Environmental Management provide copies of the revised draft permit (based on the aforementioned revisions) and fact sheet for EPA review prior to final permit issuance.

If you have any questions, please call Ms. Caroline O. Ejimofor, of my staff, at (404) 562-9309.

Sincerely,



Douglas F. Mundrick, Chief
Surface Water Permits and Facilities Branch
Water Management Division

cc: Alabama Power Company

600 North 18th Street
Post Office Box 2641
Birmingham, Alabama 35291
Tel 205 257 1000



May 29, 2003

Overnight Delivery – Receipt Requested

Ms. Sheri Festoso
Alabama Department of
Environmental Management
1400 Coliseum Blvd.
Montgomery, AL 36110-2059

Re: 316a Study Report
Barry Steam Plant
NPDES Permit No. AL0002879



Dear Ms. Festoso:

As you are aware, in the past, the U.S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (Department) have issued and reissued NPDES permits for the operation of Alabama Power Company's Barry Steam Plant which included no numeric effluent limitations for the thermal component of the discharge based on a variance granted pursuant to the provisions of Section 316(a) of the Clean Water Act (CWA) and related federal regulations. However, in the latest NPDES permit for the Barry Steam Plant, ADEM included thermal limits, stating that additional studies needed to be conducted prior to granting a 316(a) variance. Alabama Power Company has completed the requested 316(a) studies required in Part IV.D of the above referenced NPDES permit. The 316(a) studies, which are enclosed with this letter, include two documents, one titled "Biological Study for Barry Steam Plant NPDES Permit Number AL0002879" and the other titled "Barry Thermal Study CE-QUAL-W2 Analysis 2001 Simulation." Based on these 316(a) studies and other information already given to the Department, Alabama Power again requests that the Department issue a 316(a) variance for the above referenced permit.

On August 26, 1997, the Department and APCO met to discuss the justification for Alabama Power's request to renew the 316(a) variance. As presented in that meeting and explained in a latter letter, APCO has previously proven to the satisfaction of the Department and EPA that a Section 316(a) variance for the Barry Plant discharge is appropriate by performing a comprehensive 316(a) study and demonstration in the 1970's and reviewing Discharge Information Zone (DIZ) surveys in 1997. Those studies demonstrated that the normal thermal component of the discharge caused no appreciable harm to a balanced, indigenous community of shellfish, fish, and wildlife in and on the Mobile River in the vicinity of the discharge.


Ms. Sheri Festoso
Page Two
May 29, 2003

Due to the nature of steam electric generating plants and the role Plant Barry plays in the electric generating system of Alabama Power Company and the Southern Company, the operations and related discharges of Plant Barry have not changed in any way that could affect significantly the effect of the normal thermal component of the discharge evaluated in the original Section 316(a) studies. Using data available from 1997 DIZ surveys which studied several of the same parameters and locations originally evaluated in Alabama Power's 1970's 316(a) demonstration, Dr. David Bayne of Auburn University presented during the August 26, 1997 meeting his scientific conclusion that the recent data show that the aquatic environment in the vicinity of the Plant Barry discharge has not declined in quality since the 1970's Section 316(a) study and, in fact, may have improved. The recent studies that are enclosed with this letter confirm the conclusion of prior studies that there has been no appreciable harm from the thermal discharge from the Barry Steam Plant and, in fact, the aquatic environment has improved.

We believe, therefore, that the Department would be fully justified in issuing a 316(a) variance to the Barry Steam Plant based on the conclusions of (1) Alabama Power Company's original Section 316(a) study, (2) Dr David Bayne's 1997 review of DIZ studies, (3) Dr. Bayne's report titled "Biological Study for Barry Steam Plant NPDES Permit Number AL0002879" and (4) Alabama Power's study titled "Barry Thermal Study CE-QUAL-W2 Analysis 2001 Simulation." These studies show that there has been no appreciable harm to a balanced, indigenous population of shellfish, fish and wildlife in vicinity of the Barry Steam Plant's thermal discharge.

Consistent with these conclusions, Alabama Power Company hereby formally reiterates its request that the Department grant a 316(a) variance for NPDES Permit Number AL0002879 pursuant to the conditions in 40 C.F.R. § 125.70. If you should have any questions or require additional information, please contact Bill Sim at (205) 257-4136 or George Kustos at (205) 257-3274.

Sincerely,


John D. Grogan
Manager, Environmental Compliance

:GPK

Enclosure



Karrie-Jo
Shell/R4/USEPA/US
07/28/2008 01:34 PM

To els@adem.state.al.us
cc gld@adem.state.al.us, Paul Schwartz/R4/USEPA/US@EPA,
Wayne Aronson/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA
bcc
Subject Fw: EPA comments on the preliminary draft permit for the
Barry Power Plant

Eric,

I took a closer look at the permit and Part I.B.4 of the permit states:

"The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time...Upon the written request of the Director or his designee, the permittee shall provide the Director with a copy of any record required to be retained by this paragraph."

In regards to EPA's request for historical effluent temperature data from Jan. 2006 to present, it appears that APC should have all the measurements they used to calculate the daily average temperature values. Again, please have them forward to us the highest temperature values measured each day from Jan 2006 to present.

Thanks,

Karrie-Jo Robinson-Shell, P.E.

----- Forwarded by Karrie-Jo Shell/R4/USEPA/US on 07/28/2008 01:13 PM -----



Karrie-Jo
Shell/R4/USEPA/US
07/28/2008 12:38 PM

To "Sanderson, Eric" <ELS@adem.state.al.us>
cc "Dean, Glenda" <GLD@adem.state.al.us>, Wayne
Aronson/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA, Paul
Schwartz/R4/USEPA/US@EPA
Subject RE: EPA comments on the preliminary draft permit for the
Barry Power Plant

As discussed earlier today with you, here are my preliminary comments on the revised draft.

1. The permit should require APC report the maximum temperature recorded for each 24-hour period, as well as the duration the effluent discharged this value.

It is my understanding that APC has not been keeping (retaining records) for all the values used to calculate the maximum daily average temperature permit values (which are reported on the DMR as the "daily max") b/c they believe only records only need to be retained for values reported on the DMRs (i.e., just the averages and not all the values used to calculate the averages). Therefore, there is no way to determine, historically, the actual highest temperature they have been discharging. The actual highest temperature discharged, along with the duration of the discharge at this temperature, is important for future thermal modeling for 316a demonstration purposes.

2. The permit should be revised to include the attached study plan elements. Alternatively, the permit could be revised to state: "The study plan shall be modified, if necessary, within 60 days of receipt of comments from the Department and EPA-Region 4."

EPA-4 is doing a detailed review of as many power plants with 316a renewal requests as possible. To ensure regional consistency, we would like to have an opportunity to review the study plan for Barry, prior to them commencing the study.



Sample CWA Section 316a Plan of Study_predictive_general.doc

Please see the following comments we submitted on other R4 power plant permits with a 316a variances.



CWA Section 316 attachment_071608.doc



TVALtitoPDavis6-23-08.pdf

Karrie-Jo Robinson-Shell, P.E.



Karrie-Jo
Shell/R4/USEPA/US

04/28/2008 11:47 AM

To gld@adem.state.al.us, els@adem.state.al.us,
BMarshall@adem.state.al.us

cc Wayne Aronson/R4/USEPA/US@EPA, Paul
Schwartz/R4/USEPA/US@EPA, Karrie-Jo
Shell/R4/USEPA/US@EPA

bcc

Subject EPA comments on the preliminary draft permit for the Barry
Power Plant

Glenda, Eric and Brian-

I completed a partial review of the draft permit and additional materials you sent last week. Please let me know when it does to PN. More than likely, I will need a 90-day extension for review.

My main concern with the is permit is the language pertaining to the 316a (thermal) variance. It is my understanding that due in part that the plant has had to cut back on power generation during 2000-2003 in order to comply with the temp limits, they have asked ADEM to allow temporary temp limit increases under certain circumstances. This request is also based on the fact that they believe the increase in thermal load to the river will cause "no appreciable harm."

My understanding is that ADEM basically wants to allow the temp increases during the summer in order for the plant to do more 316a studies that would justify the increases. The first study would begin within three years of the permit's effective date followed by another study that would begin before the end of the permit. During Apr-Nov the daily average (reported as a daily max) could be as high as 115 F and the monthly ave would be 112 F. (This temporary increase is allowed in a footnote.) During the winter (Dec-Mar) months the temps would be 94.5 F and 84.5 F.

Comments:

1. The permit seems to allow an increase in temp limits without a demonstration that backsliding would result. I could not find any new information that would fully justify the temporary increase. What has changed during the term of the permit that is different? They mentioned the cut back in power during 2000-2003, but what about more recent years? Have they done any predictive studies that would show that increase would not cause an adverse impact on the aquatic environment near the discharge?

2. Footnote 6/ contains the definition of temperature daily max , which reads: "Notwithstanding the provisions of Part III.H.6, here and after "Daily Maximum" as it applies to temperature means the maximum daily average value." Part III.H.6 reads: "Daily maximum means the highest value of any individual sample result obtained during a day."

I believe there is no definition in the EPA regs that says that daily max is the highest value in a day. This being the case, in addition to reporting the daily max temp (as defined in the permit), I recommend the permit require the facility to report the daily instantaneous maximum value for temperature , which should be defined in the permit as the highest maximum value for any 24-hour period.

3. Footnote 4/ does not seem to me to be appropriate for an NPDES permit; I will need our attorneys to take a look at it. It reads:

"Included in the variance reference in foot note 3/, alternative Daily Maximum and Monthly Average temperature limits not to exceed 115 and 112, respectively, during any portion of the months from June through September apply if written certification by the Permittee's Responsible Official is provided to the Department certifying that there are no operational measures, supplemental power sources, or other available options to prevent the power grid from being compromised and posing an imminent threat to public health and safety. Upon certification by the Permittee, ambient monitoring shall be conducted in accordance with Part IV of the permit, and results of which must demonstrate compliance with ADEM Administrative Rule 335-6-10 and 40 CFR Part 125 H."

a) Units for temperature need to be included.

b) The provision seems to circumvent the temp limits in the Effluent Limitations table ("DM"=112 F and MA=108 F) without first making a showing that the increase will not cause an adverse impact. I suggest

before the increase is allowed, the facility complete some predictive studies. At a minimum, the company should present a literature research document or some sort of model that predicts, as best as possible, what the thermal impacts would be on Representative Important Species (RIS) during all times of the year (i.e., once per quarter) relative to a reference area (i.e., like an upstream point that is not influenced by the thermal load). It is possible that the winter months could be the most critical time of year. Information should also be required on spawning areas for RIS, their heat tolerant ranges, their most sensitive life stages, etc.

c) If EPA attorneys determine that this provision is OK, at a minimum the terms "operational measures", "supplemental power sources" or "other available options" should be defined.

4. Part IV of the permit contains the 316a Thermal Study requirements. Basically, the plant has 60 days from the effective date to submit a study plan to ADEM. Due to recent EAB decisions regarding 316a variances at other power plants, the permit should state that EPA must agree in writing to the plan before it gets approved by ADEM. This will ensure that R4 is being consistent with rulings from the EAB decisions. Also, this provision should be revised to require the company to investigate the costs for increasing its cooling capacity before ADEM allows the increase in temperature. Have they looked at adding a Helper Cooling Tower for units 1-5 or increasing the efficiency and capacity of the existing cooling towers for units 6 and 7?

5. The facility is upstream of an impaired segment for mercury. How far upstream is the facility from the impaired segment? The 2C shows that the reported below 0.0002 mg/l for mercury, but this level of detection is not low enough to show that they are causing or contributing to stream impairment (i.e., not discharging more than the AL WQS for mercury for FW (0.012 ug/l)). I recommend the permit require the permit to monitor for mercury using method 1631 E at least once per quarter for one year.

6. Please forward to me the following data for outfall 001:

- a. highest temperature value recorded for each day during Jan 1, 2006 - present.
- b. daily average temperature recorded for each day during Jan. 1, 2006 - present
- c. the cooling water intake velocity for each day during Jan. 1, 2006 - present
- d. the cooling water effluent flows for each day during Jan. 1, 2006 - present

7. The applicant reported on form 2c a maximum daily winter temperature of 40.50 C (104.9 F) out of 515 readings and a maximum daily summer temperature of 45.06 C (113.1 F) out of 547 readings. Were these values the highest values taken over any 24 hour period, or were these values the daily maximums as defined in the permit for temperature?

Karrie-Jo Robinson-Shell, P.E.



"Sanderson, Eric"
<ELS@adem.state.al.us>

07/25/2008 03:22 PM

To: Karrie-Jo Shell/R4/USEPA/US@EPA

cc: "Dean, Glenda" <GLD@adem.state.al.us>

bcc:

Subject: RE: EPA comments on the preliminary draft permit for the
Barry Power Plant

<<APCO Barry Steam Plant AL0002879.doc>> <<APCO Barry rationale (04022008).doc>>

Karrie-Jo,

I appreciate your initial review and comments of our proposed Barry draft permit. The main focus of your comments of the proposed draft permit are related to footnote 4 which allows for a temporary temperature limit increase for "emergency conditions". Alabama Power has temporarily rescinded their request to include footnote 4 in the draft permit. Alabama Power is currently gathering information in order to further define what constitutes an "emergency condition". Once Alabama Power's research is complete, the Department expects Alabama Power to request a permit modification to address the proposed "emergency conditions" requirements. The Department has removed footnote 4 of the draft permit which would have allowed temporary temperature limit increases under "emergency conditions". I have addressed each of your comments in your original email below. In addition, I have also attached a revised draft permit/rationale which incorporates the changes made to the draft permit.

I would like to place the attached draft permit on Public Notice as soon as possible. Please let me know if you have any additional questions or concerns.

Thanks

Eric

-----Original Message-----

From: Shell.Karrie-Jo@epamail.epa.gov [<mailto:Shell.Karrie-Jo@epamail.epa.gov>]

Sent: Monday, April 28, 2008 10:47 AM

To: Dean, Glenda; Sanderson, Eric; Marshall, Brian C

Cc: Aronson.Wayne@epamail.epa.gov; Schwartz.Paul@epamail.epa.gov;

Shell.Karrie-Jo@epamail.epa.gov

Subject: EPA comments on the preliminary draft permit for the Barry Power Plant

Glenda, Eric and Brian-

I completed a partial review of the draft permit and additional

materials you sent last week. Please let me know when it does to PN.

More than likely, I will need a 90-day extension for review.

My main concern with the is permit is the language pertaining to the 316a (thermal) variance. It is my understanding that due in part that the plant has had to cut back on power generation during 2000-2003 in order to comply with the temp limits, they have asked ADEM to allow temporary temp limit increases under certain circumstances. This request is also based on the fact that they believe the increase in thermal load to the river will cause "no appreciable harm."

My understanding is that ADEM basically wants to allow the temp increases during the summer in order for the plant to do more 316a studies that would justify the increases. The first study would begin within three years of the permit's effective date followed by another study that would begin before the end of the permit. During Apr-Nov the daily average (reported as a daily max) could be as high as 115 F and the monthly ave would be 112 F. (This temporary increase is allowed in a footnote.) During the winter (Dec-Mar) months the temps would be 94.5 F and 84.5 F.

Comments:

1. The permit seems to allow an increase in temp limits without a demonstration that backsliding would result. I could not find any new information that would fully justify the temporary increase. What has changed during the term of the permit that is different? They mentioned the cut back in power during 2000-2003, but what about more

recent years? Have they done any predictive studies that would show that increase would not cause an adverse impact on the aquatic environment near the discharge?

ADEM RESPONSE TO COMMENT 1:

The language of the anti-backsliding prohibition allows higher limits if they are based on information which was not available at the time of the original permit issuance. Specifically, under Section 402(o)(2) of the CWA, a permit may be renewed, reissued, or modified to contain a less stringent effluent limitation if:

... (B)(ii) information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance; or ... (D) the permittee has received a permit modification under section 301(c), 301(g), 301(h), 301(i), 301(k), 301(n), or 316(a) ...

The new studies provided by Alabama Power was not available to ADEM or EPA at the time the previous permit was issued and, thus, comports with the exemptions of Section 402(o)(2)(B)(ii).

Alabama Power sent additional load cut data from 2000 thru 2006 to the Department in a letter dated March 29, 2007. The Department will send you the March 29, 2007, submittal in a follow-up email.

The Department is not aware of Alabama Power performing any predictive studies. Please note that applicable regulations provide that existing dischargers may base their 316(a) demonstration upon the "absence of prior appreciable harm in lieu of predictive studies." Id. § 125.73(c)(1). The regulations stipulate that an existing discharger must simply show that "no appreciable harm has resulted from the normal component of the discharge (taking into account the interaction of such thermal component with other pollutants and the additive effect of other thermal sources to a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge has been made)" or that "despite the occurrence of such previous harm, the desired alternative effluent limitations (or appropriate modifications thereof) will nevertheless assure the protection and propagation of a balanced, indigenous community of shellfish, fish and wildlife in and on the body of water into which the discharge is made." Id. In determining whether prior appreciable harm has occurred, the agency must consider the length of time in which the applicant has been discharging and the nature of the discharge. Id. § 125.73(c)(2).

The Department has determined that the studies conducted by Alabama Power and submitted to the Department for review after the issuance of the current thermal limits do not substantiate the removal or non-continuance of the existing 316(a) variance.

2. Footnote 6/ contains the definition of temperature daily max , which reads: "Notwithstanding the provisions of Part III.H.6, here and after "Daily Maximum" as it applies to temperature means the maximum daily average value." Part III.H.6 reads: "Daily maximum means the highest value of any individual sample result obtained during a day."

I believe there is no definition in the EPA regs that says that daily max is the highest value in a day. This being the case, in addition to reporting the daily max temp (as defined in the permit), I recommend the permit require the facility to report the daily instantaneous maximum value for temperature, which should be defined in the permit as the highest maximum value for any 24-hour period.

ADEM RESPONSE TO COMMENT 2:

Subsection (d) of 40 C.F.R. § 122.45, for "continuous discharges," require, unless impracticable, that NPDES permits include "maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works" § 122.45(d)(1). The applicable definition section further provides that a "maximum daily discharge limitation means the highest allowable 'daily discharge.'" Per CFR § 122.2 a "daily discharge" means:

The "discharge of a pollutant" measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement [i.e., temperature], the "daily discharge" is calculated as the average measurement of the pollutant over the day.

The Department sets NPDES thermal limitations on this basis. All of Alabama Power's current NPDES permits include thermal limitations based on maximum daily average values. The Department believes the proposed temperature requirements meet the applicable standards set by Section 316(a). In addition, existing studies based on historical data have not shown appreciable harm from the proposed thermal variance limitations (based on maximum daily average values).

3. Footnote 4/ does not seem to me to be appropriate for an NPDES permit; I will need our attorneys to take a look at it. It reads:

"Included in the variance reference in foot note 3/, alternative Daily Maximum and Monthly Average temperature limits not to exceed 115 and 112, respectively, during any portion of the months from June through September apply if written certification by the Permittee's Responsible Official is provided to the Department certifying that there are no operational measures, supplemental power sources, or other available options to prevent the power grid from being compromised and posing an imminent threat to public health and safety. Upon certification by the Permittee, ambient monitoring shall be conducted in accordance with Part IV of the permit, and results of which must demonstrate compliance with ADEM Administrative Rule 335-6-10 and 40 CFR Part 125 H."

- a) Units for temperature need to be included.
- b) The provision seems to circumvent the temp limits in the Effluent Limitations table ("DM"=112 F and MA=108 F) without first making a showing that the increase will not cause an adverse impact. I suggest before the increase is allowed, the facility complete some predictive studies. At a minimum, the company should present a literature research document or some sort of model that predicts, as best as possible, what the thermal impacts would be on Representative Important Species (RIS) during all times of the year (i.e., once per quarter) relative to a reference area (i.e., like an upstream point that is not influenced by the thermal load). It is possible that the winter months could be the most critical time of year. Information should also be required on spawning areas for RIS, their heat tolerant ranges, their

most sensitive life stages, etc.

c) If EPA attorneys determine that this provision is OK, at a minimum the terms "operational measures", "supplemental power sources" or "other available options" should be defined.

ADEM RESPONSE TO COMMENT 3:

The Department has removed footnote 4 of the draft permit which would have allowed temporary temperature limit increases under "emergency conditions".

4. Part IV of the permit contains the 316a Thermal Study requirements.

Basically, the plant has 60 days from the effective date to submit a study plan to ADEM. Due to recent EAB decisions regarding 316a variances at other power plants, the permit should state that EPA must agree in writing to the plan before it gets approved by ADEM. This will ensure that R4 is being consistent with rulings from the EAB decisions. Also, this provision should be revised to require the company to investigate the costs for increasing its cooling capacity before ADEM allows the increase in temperature. Have they looked at adding a Helper Cooling Tower for units 1-5 or increasing the efficiency and capacity of the existing cooling towers for units 6 and 7?

ADEM RESPONSE TO COMMENT 4:

The Department has removed footnote 4 of the draft permit, which would have allowed temporary temperature limit increases under "emergency conditions". In addition, the Department has proposed that Alabama Power submit a plan of study within 60 days of the permit's reissuance for the sole purpose of providing new data if Alabama Power requests an extension of the 316(a) permit in the next permit cycle.

Please note that the variance under 316(a) only requires the applicant to demonstrate an "absence of prior appreciable harm." Id. § 125.73(c)(1). The Department can find no statute or regulation in state or federal law requiring the consideration of helper towers once this demonstration is met.

5. The facility is upstream of an impaired segment for mercury. How far upstream is the facility from the impaired segment? The 2C shows that the reported below 0.0002 mg/l for mercury, but this level of detection is not low enough to show that they are causing or contributing to stream impairment (i.e., not discharging more than the AL WQS for mercury for FW (0.012 ug/l)). I recommend the permit require the permit to monitor for mercury using method 1631 E at least once per quarter for one year.

ADEM RESPONSE TO COMMENT 5:

The Mobile River stream segment which is listed as impaired for mercury in ADEM's 2008 303(d) list, which has been recently approved by EPA, has its upper boundary at Cold Creek, which is located slightly over one-half mile below the Barry Steam Plant's ash pond discharge. The draft TMDL date for the affected segment is 2013. The Department has already requested and reviewed mercury monitoring data utilizing Method 1631e from the Barry Steam Plant. The Department will resend the updated mercury data to EPA for review and consideration.

6. Please forward to me the following data for outfall 001:

- a. highest temperature value recorded for each day during Jan 1, 2006 - present.
- b. daily average temperature recorded for each day during Jan. 1, 2006 - present
- c. the cooling water intake velocity for each day during Jan. 1, 2006 - present
- d. the cooling water effluent flows for each day during Jan. 1, 2006 - present

ADEM RESPONSE TO COMMENT 6:

- a. This data was not required by the Barry Steam Plant's NPDES permit and, therefore, is not available.

- b. Alabama Power reported this data to the Department via its DMRs for the Barry Steam Plant. Therefore, this data is already available to EPA on its PCS database.
 - c. This data was not required by the Barry Steam Plant's NPDES permit and, therefore, is not available.
 - d. Alabama Power reported this data to the Department via its DMRs for the Barry Steam Plant. Therefore, this data is already available to EPA on its PCS database.
7. The applicant reported on form 2c a maximum daily winter temperature of 40.50 C (104.9 F) out of 515 readings and a maximum daily summer temperature of 45.06 C (113.1 F) out of 547 readings. Were these values the highest values taken over any 24 hour period, or were these values the daily maximums as defined in the permit for temperature?

ADEM RESPONSE TO COMMENT 7:


The values reported on Form 2c of the permit application were the values as defined in the NPDES permit, not the absolute highest instantaneous value recorded during the day.



APCO Barry Steam Plant AL0002879.doc APCO Barry rationale (04022008).doc



Karrie-Jo
Shell/R4/USEPA/US
07/28/2008 12:38 PM

To "Sanderson, Eric" <ELS@adem.state.al.us>
cc "Dean, Glenda" <GLD@adem.state.al.us>, Wayne
Aronson/R4/USEPA/US@EPA, Mark
Nuhfer/R4/USEPA/US@EPA, Paul
bcc
Subject RE: EPA comments on the preliminary draft permit for the
Barry Power Plant 

As discussed earlier today with you, here are my preliminary comments on the revised draft.

1. The permit should require APC report the maximum temperature recorded for each 24-hour period, as well as the duration the effluent discharged this value.

It is my understanding that APC has not been keeping (retaining records) for all the values used to calculate the maximum daily average temperature permit values (which are reported on the DMR as the "daily max") b/c they believe only records only need to be retained for values reported on the DMRs (i.e., just the averages and not all the values used to calculate the averages). Therefore, there is no way to determine, historically, the actual highest temperature they have been discharging. The actual highest temperature discharged, along with the duration of the discharge at this temperature, is important for future thermal modeling for 316a demonstration purposes.

2. The permit should be revised to include the attached study plan elements. Alternatively, the permit could be revised to state: "The study plan shall be modified, if necessary, within 60 days of receipt of comments from the Department and EPA-Region 4."

EPA-4 is doing a detailed review of as many power plants with 316a renewal requests as possible. To ensure regional consistency, we would like to have an opportunity to review the study plan for Barry, prior to them commencing the study.



Sample CWA Section 316a Plan of Study_predictive_general.doc

Please see the following comments we submitted on other R4 power plant permits with a 316a variances.



CWA Section 316 attachment_071608.doc



TVALtrtoPDavis6-23-08.pdf

Karrie-Jo Robinson-Shell, P.E.